

Rock Products

DEVOTED TO THE PRODUCTION
AND SALE OF ROCK AND CLAY PRODUCTS.

Vol. 1.

LOUISVILLE, KY., SEPTEMBER, 1902.

No. 6.

SLATINGTON'S PIONEER.

It is only a little more than fifty years since the beginning of one of Pennsylvania's famous industries, when slate was discovered and developed in the Lehigh regions, but there has grown from this start an industry having a product valued at probably more than \$3,000,000.00 in the State of Pennsylvania alone this year.

A report of the United States Geological Survey on the stone industry for 1901 shows a total value of slate produced for the year of \$4,487,525.00. Of this amount Pennsylvania alone produced \$2,984,264.00, and all this product comes from a little belt in the Blue Ridge Mountains, having an extreme length of about fifty miles and an extreme breadth of fifteen miles, the location being in Northampton and Lehigh counties which are divided by the Lehigh River.

What is known as the Eastern division, or Bangor region, includes a section around Bangor, Pen Argyl, Danielsville, Wind Gap and Hard Vein, this section all being East of the Lehigh River.

The Slatington division is the Western division, being located in Lehigh County, West of the Lehigh River. The distinguishing feature between these two regions consists mainly in the formation of the deposits. The formation of the Bangor region is made up of many beds lying flat, while in the Slatington region the deposits dip and rise like a series of waves.

The first branch of the slate industry to be developed was that of making roofing slate, and the roofing slate represents the bulk of the product reported for the year 1901, while the slate used for other purposes amounts to \$673,115.00. The Manufacture of roofing slate is a very simple process, the work being done almost entirely by hand, even to day. A roofing slate plant consists usually of a number of small shanties along the side of the quarry, the slate coming up from the quarry by cableways, being usually unloaded on a truck, having a track that runs along in front of the small shanties. The crew at each shanty consists of a man to work the block of stone down to the size required for roofing shingles, a splitter, who takes the blocks and splits them to the thickness required for roofing slate, and a trimmer, who has a foot-power chopping-knife machine for trimming and squaring the edges to the size required, and sometimes a boy to pile the slate and do other incidental work. There are many peculiarities, too, about this simple process, but let us leave that as a subject for another story.

If you should go up in the slate belt of Pennsylvania, and undertake to look up the early

history of the slate industry by inquiring of the people in the slate business thereabouts, and others conversant with the industry, you will probably find that there is some confusion or obscurity about the exact point at which the industry began. If you ask the natives in and around Slatington whether Slatington or Bangor marks the beginning of the industry, about nine out of ten of the people of Slatington would tell you they were not sure, but their talk would lead you to believe that Slatington should have the benefit of the doubt. If you ask the people around Bangor in the same way, the answers would be practically the same,



only the Bangor people would naturally like to see Bangor have the benefit of the doubt.

There is one point, however, over which there is no confusion, and that is as to who is the pioneer in the slate industry, for when you ask that question, the answer promptly given, is: "Squire Kuntz."

Henry Kuntz, Esquire, is not only the universally recognized pioneer of the famous Pennsylvania slate region, but he is one of the most widely known men connected with this industry. Mr. Kuntz has been identified with the production of slate from the Slatington (Pa.) district ever since

the industry began to be of any importance. He opened his first quarry in 1852, just outside the present limits of Slatington. This was not the first quarry opened in this district, but it was right at the time when the industry began to assume importance, and what is known as the oldest quarry, which was opened in 1846, and called the Franklin quarry, later came under his control.

Mr. Kuntz followed the opening of his first quarry with two other quarries in the next three years and by that time he was getting warmed up and becoming interested in his work, and a little later opened what is known as the Keystone quarry, above Slatedale.

Since starting in business Mr. Kuntz has worked, in all, probably between fifteen and twenty quarries, organizing the Slatington Slate Co., of which he is still president and manager, in 1884. For ten years after organizing this company, he was the sole proprietor, but on December 26, 1894, he incorporated the company and associated with himself some members of his immediate family, though he continued to give the business his personal attention.

In addition to the various quarries, the company now owns several large and well-equipped blackboard and structural slate mills for manufacturing slate for all manner of uses. Shingle slates are manufactured at all the quarries.

It has not all been easy sailing for Mr. Kuntz, for there have been times in his life that would have discouraged any man not possessing persevering qualities of a high degree, for the slate business, like any other business, has its ups and downs. In fact, almost any man who is familiar with the slate business, will tell you that there has been more money lost than made in developing slate quarries. There come years of feasting and years of famine, and it requires during some of these years of famine a man of strong characteristics to pull through and be in shape to take a part during the years of feast, and Mr. Kuntz, being a pioneer and identified with the industry

through all these stages, had to contend with all these things. But he has come through it well, and carries, in addition to his life-long experience, a record of honorable dealing and thorough integrity that entitles him to a seat of honor among the Captains of Industry.

To such men, the industrial pioneers who have labored faithfully and unfalteringly through the discouraging trials incident to the development of any line of business, there is not only due a fair share of the after harvests, but they are also entitled to a seat of honor, as it were, in the records of the history-makers of the world.

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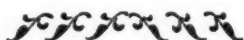
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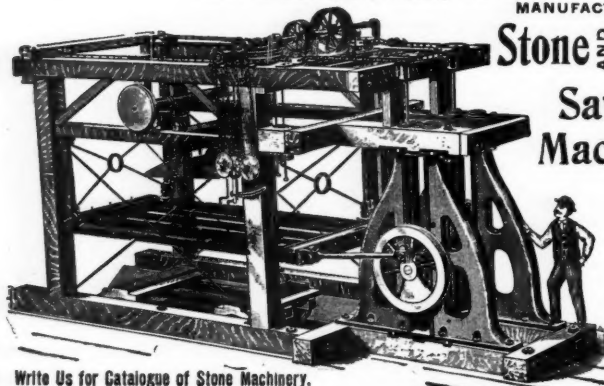
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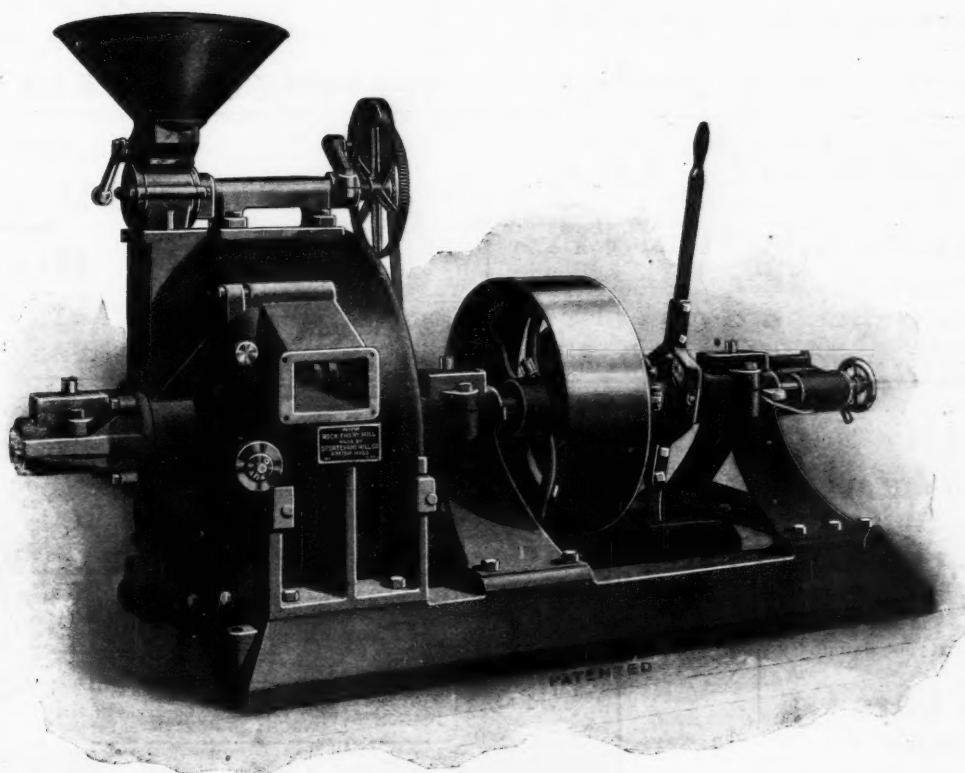
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A monthly trade journal devoted to the interests of the manufacturers and dealers in rock products and kindred lines, including Lime, Cement, Salt, Sand, Slate, Granite, Marble, Sandstone, Grindstones, Artificial Stone, Emery Stone, Quarries, Monuments, Manganese, Asphalt, Phosphates, Plaster, Terra Cotta, Roofing and Roofing Tile, Coal, Oil, Mineral Wool, Brick, etc.

The mission of ROCK PRODUCTS is to serve the trade in any and every honorable way possible, to promote better profits and make life more pleasant for those engaged in the business to which it caters. With this end in view, criticism is courted, and all are invited to use its columns to further ideas and suggestions for the good of the trade. The office, too, is at the service of the constituents of this paper; so when you want to buy or sell, or merely ask a question, write, and when you are in town, call and make it your headquarters.

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THE FRANCIS PUBLISHING COMPANY,
411 Columbia Building, Louisville, Kentucky

LOUISVILLE, KY., SEPTEMBER, 1902.

OUR SLATE.

COST.

Are you certain you are getting it all in in figuring your cost of production?

IN ONE of our State Geological reports it is pointed out incidentally that by setting the brick between the fire holes in a kiln about twice the distance apart they are in the upper part of the kiln the quantity of soft brick is materially reduced. Then, why should it ever be otherwise? We would like to have some expressions from the brick men among our readers about setting brick in the kiln, for it would be interesting—and some of us would learn something.

ARE you going to have an exhibit at the St. Louis Fair? If so, tell us about it.

WHAT proportion of the total cost does your item of fuel represent in burning brick?

SLATE can be used for more things than you have any idea of, unless you are mighty well acquainted with it.

IF THERE is a line of building material for which there has not been an active demand this year, what is it?

BY THE WAY, when they get through talking and actually go to building that Isthmian canal, won't there be something doing in cement?

FROM the reports that come from New York it looks like the brick men there are just trying to see how cheap they can manufacture and sell brick.

THE slate men have had a busy season, and it is a scramble to get out slate enough to supply the demand where it used to require some effort to sell the supply.

GEORGIA has a new fertilizer law, which goes into effect October 1, the beginning of the fertilizer season, that raises the standard of fertilizers that can be sold in that State.

ONE of the best assets in any business is friendly and reciprocal relations with your competitor in the same line of business, and there is no better way to get this relation than by organization.

THERE is some interesting matter in this issue about American marble, and if those interested in developing our marble resources will communicate with us, they may hear something further on the same subject.

WE ARE pleased to note that the lime men of the South are striving for better prices for lime, and we want to see this spirit get abroad in the land to such an extent that a national lime association will be formed soon to help the cause along.

THERE might be worse things than municipalities establishing a fixed price for asphalt paving, provided the price is one at which the paver can make a fair profit, because that would cut out competition that is beginning to act like it may eat up the profits in the business.

THOSE who sell German cement in this country may have more orders than cement, as some of them have stated heretofore, but still it looks like there is something wrong with the cement orders back in Germany, or else German manufacturers would be getting a better price at home.

THERE has been quite a stir in New York newspapers about imported pottery being entered at too low a value, but just how much this is affecting the home potteries we have not yet been able to discover. In a schedule for taxes, no matter of what kind, there has always been an inclination to undervalue and some follow this inclination to an aggravating extent.

TRANSPORTATION is generally a deciding factor in putting building stone on the market, for the stone is so widely distributed that an expensive haul from any certain locality puts the stone of that locality at a disadvantage that can be overcome only by special qualities of the stone that will justify the asking of a better price, and when stone has this quality it should bring a better price aside from transportation because the owner is entitled to it.

NOW is a good time to study the fertilizer question, and for manufacturers of fertilizers to tell the prospective purchasers about the qualities of their offerings, so that the fall season may find everything done but the delivering of the goods.

WILL some one please rise up and tell us whether or not granitoid sidewalks injure shade trees? There has been quite a lot of newspaper discussion on this subject, but no one has yet told us just what kind of a sidewalk is best for shade trees, or why it is that granitoid is harder on them than other material.

THE material for making Portland cement is quite plentiful and widely distributed, and the man who thinks he has a gold mine because he has a marl bed, or a limestone ledge and a clay bank, is mistaken, for while they are good things to make cement out of, there are more trying problems than the finding of the material before golden harvests come from such an industry.

LIME is a scarce article in many localities just now, and one of the reasons assigned is the scarcity of hard coal. Lime is really rather scarce any way, for there has been a very active demand this season, but those who are hampered by a scarcity of fuel are in a peculiar unfortunate condition. It strikes us, however, that by looking into the subject closely they will find there are appliances for burning lime with soft coal, and that their unfortunate condition is partly due to not keeping up with the procession in modern methods. To insure success there is nothing like keeping up-to-date, and this applies in the lime business just as well as anywhere else.

OCCASIONALLY we see newspaper reports of wrangles about this or that kind of stone for a specified purpose. In some places it is a contention between limestone and sandstone interests about the respective qualities of the stone for street curbing, and again it is between granite and sandstone for building a sea wall, and it strikes us that these wrangles are out of place. It is all right for the stone trade, and those interested in using stone, to study and compare the merits of different stone for certain purposes, but these petty wrangles and contentions are not enlightening, and they create unpleasant feelings that it were better for the trade to seek to avoid.

THERE will be an interesting time in the cement business if next year shows up a greater shortage in the supply than this year notwithstanding the additional capacity, as one of our leading cement men thinks it will. But, whether it does or not, there is one point we want to urge on cement manufacturers, and that is to get a fair price when they go to making contracts for next season. The bulk of the cement made this year was sold under contract at a rather low price, and the manufacturers have not been able to reap the benefits of the high prices that came later, to any great extent, and their one chance is to get it at the end of the year by making contracts at fair prices. Cement people, as a rule, have not only been tied up in contracts at nominal prices, but, stimulated by the scarcity in supply, have been spending money for additional equipment till it looks like the whole trade has spent much more money than it has made this year, and it is time to do something to get it back. If they can not get a fair price individually at contract time, there should be combined and associated effort; in fact, the associated effort should come first to make things certain, and we want to remind those in the trade that while they may feel amply able to stand alone, it is a lot easier to face the music in company with the other fellows. Try it once—let us have a cement association.

For the Retailer.

The Interstate Builders' Supply Association.

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The Retail Dealer and His Interest in the Cement Question.

"I don't know how many dealers sell Portland cement," says a writer in the *St. Louis Lumberman*, "but I do know that the demand for it has grown wonderfully during the last few years and that in many places it is a profitable item to handle. A few years ago nearly all of the Portland cement used in this country was imported from England and Germany and the odd-looking, iron-hooped barrel was a guarantee of quality. The price was too high for general use, it retailing at from \$3.00 to \$4.00 a barrel. About all the demand for it outside the cities was for plastering cisterns, and a few barrels in stock was all that was needed.

"The American people have never been satisfied with being outdone by any other country and the Portland cement industry was no exception.

"The prejudice, to a great extent, against the American product has been overcome, and we are shipping our improved machinery for its manufacture to the countries from which we formerly bought the finished goods. Perhaps no other article connected with the general building trade is so little known; at least that is the case in my territory. People know that when mixed with sand and water it hardens, but they know little of how it is made and the proper way of mixing and using it.

Demand Springing Up at Country Points.

"A barrel weighs 400 pounds gross or 380 pounds net. When shipped in bags the weight is 100 pounds gross, four sacks making one barrel. I find it better to buy in bags for the general trade on account of it being easier to handle and to fill orders for small amounts. Many civil engineers claim for it that it is better than stone, for the reason that it is impervious to water, fresh or salt, and to the air in all climates. There are no mortar joints to rot and fall out and like the saying about whiskey, 'the older the better.'

"Recently there has sprung up in my territory quite a demand for it for foundations for buildings, due, I think, to a great extent to the building of an electric line through here, where it was used exclusively in their bridge abutments, culverts and foundations for buildings.

Dealers Should Encourage the Use of Cement.

"The civil engineer in charge of this work told me that it cost \$4.50 per cubic yard in their bridge abutments as against about \$8.00 for limestone, and he considered it better. If a small culvert is to be built across a roadway there is nothing that makes a better job than to take a few steel arches and cover them with a coat of Portland cement, finishing the ends tastefully. A dealer would be doing a good act for the public and at the same time add to the profits of his cement trade to urge the advantages of this class of work.

"The matter I wish especially to talk about, however, is foundation construction. This subject may not interest those who can obtain stone or brick

at a low cost, but where they have to be shipped at a cost comparatively high, a good substitute may be found in cement and gravel.

Some Useful Information.

"I give the following figures by way of illustration, taking average prices in this territory. We will say, for example, that a foundation for a small dwelling is to be built, and the specifications call for a wall one foot thick, an average depth below ground level of 18 inches, one foot above and 120 feet total length, making 300 cubic feet in the wall or 11 1/2 cubic yards. We will estimate the cost of building this wall with both brick and Portland cement, taking the following prices as a basis:

Brick delivered on the ground, \$8.50 per 1,000.	
Lime 25 cents per bushel.	
Gravel \$1.00 per yard.	
Portland cement \$2.50 per barrel.	
"The excavations we will not consider, as the cost would be the same in either case. For the brick wall we will estimate:	
Six thousand brick at \$8.50.....	\$51 00
Twelve bushels lime at 25 cents.....	3 00
Three yards sand at \$1.00.....	3 00
Mason's labor at \$2.50 per 1,000.....	15 00
Total.....	\$72 00

Cost per cubic foot, 24 cents.

"Concrete work will require 1 1/2 barrels per cubic yard, or 22 pounds per cubic foot. It will also require about 34 cubic feet of gravel to the finished cubic yard. Now for our 300 cubic feet of wall we estimate:

16 1/2 barrels cement at \$2.50.....	\$41 25
14 yards of gravel at \$1.00.....	14 00
Labor per yard \$1.50.....	16 65
Total.....	\$71 90

Cost approximately 24 cents per cubic foot, or the same as brick.

"I have made no estimate for the form boards, which require 240 feet of 12 common boards S1S and the stakes, but as the boards can be used for sheathing or lining, they will add no extra cost to the building.

"No particular skill is required in the work except a knowledge of mixing, and it may be successfully done by common laborers if proper oversight is given.

"Mix only such quantity as can be used readily, as it will begin to set in about one hour.

"Use good clean river or creek gravel or sharp sand and crushed stone and mix dry with cement in the proportions I have indicated. This is usually done by cutting twice with shovels.

"Next hollow out the center and pour in water, but not enough to thoroughly wet when mixed. Mix again with shovels and finish wetting with a sprinkler. In all add only enough water so that it will show moisture when tamped in the wall. The forms can be taken down in twelve hours, and the surface of the wall pointed up with one part cement and two parts sharp screened sand.

"Some cheapen the work by using a cheaper or what is known as the natural cement below the ground. It costs about one-half as much as Portland.

"The figures I have given are approximately correct, and can be used in estimating any ordinary concrete work, except that in some instances the form lumber must be considered.

"The following table as given by one of the manufacturers will be found valuable:

One barrel Portland cement equals 4 bushels.	
One barrel natural cement equals 4 bushels.	
One barrel Portland cement contains about 4 cubic feet.	
One bushel Portland cement, 1-in. thick, and one of sand will cover 2 1/4 yards.	
One bushel Portland cement, 1 in. thick, and two of sand will cover 3 1/2 yards.	

Other Pointers That Help Business.

"With this table and the estimates given on building walls a dealer may be able to give his customers some idea of the amount of materials needed for a certain piece of work. Every dealer knows that he is expected to have a knowledge of the use of everything he sells. How many times are you asked to tell how many shingles it will take to cover a house of certain dimensions, with some uncertainty as to the pitch of the rafters, or how many pounds of nails will be required to build a barn, or the number of gallons of paint, if you sell paint, needed to cover it? In fact, you are expected to be able to give reasonably accurate

estimates on any class of work for which you sell the material, and your customers have a right to expect it of you.

"Cement makes an excellent floor for cellars, spring houses and wash rooms, at the house and buggy room at the barn. It is easy to keep clean and will outlast the building.

"I have seen porch floors made by building the foundation solid concrete and finishing with a coat of cement and sand, and I think it makes a handsome job, especially for a large house.

"A farmer came in a few days ago and bought some with which to make a stable floor, but I am inclined to doubt its adaptability to the purpose, unless plenty of bedding is kept under the horses. It would be excellent, however, for the drive ways about the barn and there would be no bother about the rats working under it.

"Cement should be kept in a perfectly dry place and on a floor sufficiently far above the ground as to prevent any absorption of moisture, and if so stored will keep without damage."

A Dry Sea of Salt

Mr. Arthur Quakersley, speaking of the field of crystalized salt, Salton, Cal., in the *World's Works*, says that its surface is as white as snow, and, when the sun is shining, its brilliance is too dazzling for the eye. The field is constantly supplied by the many salt springs in the adjacent foot-hills, the waters from which drain into the basin, and, rapidly evaporating, leave deposits of almost pure salt. The deposits, varying in thickness from ten to twenty inches, from a solid crust over the marsh.

To secure the harvest the salt field is plowed with a salt-plow—a massive four-wheeled implement driven by steam and managed by two men. The heavy steel share makes a broad but shallow furrow, throwing up the crust in parallel ridges on either side, and bringing to view a seepage from the salt springs that underlie it. About seven hundred tons are plowed up in a day. Laborers then work the salt with hoes to and fro in the water to remove the earthly particles, and, when this is done, they stack up the washed salt in conical mounds to be taken later to the mill. The water in which the crystals are washed is already so saturated with salt that the crystals suffer scarcely any loss by the cleansing process, which is a necessary preliminary to refining. To furnish additional water for washing the salt, an artesian well has been sunk, which, though it is 900 ft. deep, is still strongly alkaline. At present only about ten acres of the great field are worked, as a new crust forms almost immediately after the plow has passed on.

To the north of the salt field is a little settlement named Salton, where the drying and milling-works are. After the salt has been stacked in the field to drain, it is loaded on flat trucks and taken to the works, hoisted to the top, and thrown into a breaker. After being reduced to particles of uniform size, it is passed through a mill and ground to powder. Then it is sifted and packed into sacks for the market. The salt prepared in this manner is of the best quality, but much is sold for commercial purposes in its unrefined condition, under the name of 'hide salt.'

Prospecting for Graphite.

Worth Chamberlain, Canton, N. Y.—Replying to your inquiry in regard to my graphite property, would say that I am engaged at the present time in prospecting a graphite mine about three miles from this village, and thus far the prospects are very flattering.

Have Incorporated.

D. G. Cutler & Co., Duluth, Minn.—Replying to your inquiry in regard to the incorporation of this company, would say that we have simply changed our business into the form of a corporation, from Cutler & Gilbert to D. C. Cutler & Co., jobbers in salt and building material.

Undervaluation of Imports.

The Trenton Pottery Co., Trenton, N. J.—In reply to your inquiry in regard to reported undervaluations in imported pottery, we presume that this report refers principally to dinnerware, in which we have little or no interest, as the bulk of our productions are sanitary ware, and our wares are so far superior to the imported wares that there are few, if any, imported at the present time, as our sanitary patterns are of much later design and much better adapted for use in this country than any foreign designs.

Letters From the Trade

SYRACUSE.

SYRACUSE, N. Y., August 12.—One of the largest firms of contractors in the city as Stearns & Sons, Warren Street. Mr. Stearns, Sr., is just back from a trip to Bangor, Pa., where there are many slate quarries, and where he gets his slate. Stearns & Sons have had several contracts for putting blackboards in the Syracuse public schools. The board of education here requires that they be four feet high, which is higher than is required in most cities. This company is agent for the Vermont Marble Co. They get their tiles from Zanesville, Ohio, the American Encaustic Tiling Co., Grueby and Falcence Co., of Boston, Mass. The latter company has a new faience tile with dull finish that is proving very popular in Syracuse. Mr. Stearns says that his great fight is against accumulating odds and ends, which take off the profit. The firm does a large business in mantels, gas logs and fire places. The Paragon Plaster Co. is the oldest paragon company in existence, having been organized in 1888. They have been putting in new machinery and various appliances for increasing their output. Manager Squires says there is a great demand for cement. The company is sales agent for the Atlas cement from Rochester to Albany and all the territory North and South. They can not get enough to fill orders. The retail price is now \$2.25 per barrel, about double what it was the first part of the season. The company carries 5,000 barrels in stock. They are also agents for the Consolidated Rosendale Cement Co., selling at mill prices. In the brick line, Manager Squires says they have to have from sixty to ninety days to fill orders. They are agents for the Columbia Brick and Terra Cotta Co. and the Columbia Face Brick Co. The company finds it hard to get canal boats to transport sand from their beds on Black River to their Syracuse plant. From now until the close of navigation the company is desirous of shipping two boat loads of sand every day. The scarcity of boats is said to be due to the great amount of lumber that is being moved from Northern New York.

The Empire Portland Cement Co. has awarded the contract for the new plant at Warners, ten miles West of Syracuse, to the American Bridge Co. The contract calls for the completion of the work in five months, and the price will be \$25,000.00. Manager Charles A. Lockard had a hard time finding a company that would do the work in a reasonable length of time. The foundation walls and boilers are being placed, and the structural iron work will be begun in a short time.

The Onondaga Pottery Co. has increased its capital stock from \$200,000.00 to \$250,000.00. The company has been buying property adjoining the plant during the past year, and it is thought that an extension is probable. The pottery was closed two weeks in July for the annual overhauling and vacations.

The Syracuse Pottery Co. has resumed operations at its reconstructed plant, having been closed since May 15. About \$8,000.00 has been expended in the reconstruction, and the output has been doubled, making the output now 160,000 flower pots a week. One of the new buildings will be used as a storehouse, and will have a capacity of 2,000,000 pots a week. The company will employ thirty-five men, and will consume 1,000 tons of clay annually.

C. and L. Merrick, brick manufacturers, have been awarded the contract for building the R. W. & O. freight house at Oswego. It will cost \$40,000.00, and will be of brick and iron. The Merricks have a brick yard at Whiskey Island, where they make common brick. They have an unlimited supply of good clay, and have been many years in the business.

The Asphaltina Construction Co., of Syracuse, has reduced its capital stock from \$100,000.00 to \$25,000.00 in accordance with the action of the directors taken at a recent meeting.

The Gouverneur Marble Co. was forced to shut down its mill recently on account of a strike. The pit gang were receiving \$1.25 a day and wanted

this raised to \$1.50. The laborers in the mill also struck for the same pay. The Northern New York and the St. Lawrence companies have, up to this time, had no trouble.

The Warner-Quinlan Asphalt Co., which works locally under the name of the Syracuse Improvement Co., is at work on a big job at Wilkesbarre, Pa. The paving will take thirty days, and 30,000 square yards of asphalt will be laid. Besides this, 44,000 square yards are being laid at Bayonne, N. J., 25,000 at Detroit, Mich., and 17,000 at Auburn, N. Y. A feature of the paving is the employment of negroes for laborers, as they can better stand the heat. The rakers are paid from \$2.25 to \$2.50 a day, the tampers and smoothers \$1.75 to \$2.00.

Adolph H. Schwartz has resigned his position as superintendent of the Syracuse and Utica division of the D. L. & W. Railroad to become manager of the W. K. Niver Coal Co., which has recently made extensive finds of coal in Pennsylvania.

The New York Brick and Paving Co. has been awarded several contracts for paving in this city and several Eastern cities.

The two patent kilns of the New York Lime Co., at Carthage, are being operated to their fullest capacity to fill orders for magnesia. Some other provision will have to be made for the manufacture of common lime.

QUINCY.

QUINCY, MASS., August 23.—The twenty-third annual outing of the local Manufacturers' Association was held August 16 at Crescent Park, R. I. There was a large outpouring of the faithful, and a thoroughly good time was enjoyed. A special train conveyed the two hundred excursionists from Boston, and the party was deposited at the entrance to this beautiful resort on Providence River shortly after 10 a. m. The return trip was made at 7 o'clock, and the intervening time was spent in the indulgence in general sports and the partaking of a substantial shore dinner.

The affair was in charge of the following efficient committee: Harry S. Nichol, William T. Spargo and Thomas F. Burke. President Harry S. Nichol, of the association, presided at the post-prandial exercises, and addresses were made by Henry McGrath, Fred L. Jones, James Elcock and Ellsworth Morgan. Each speaker had only words of encouragement for the trade, and all were confident of a new era of prosperity for Quincy granite.

The County Commissioners of St. Joseph County, Indiana, have awarded the contract for the soldiers' monument to be erected at South Bend, Ind., to McDonnell & Sons, of this city. The firm's design secured the first prize of \$500.00 several months ago, and although they were underbid on the general contract amounting to about \$25,000.00, they were successful in securing same, the commissioners having more confidence in their ability to fulfill their wishes. The firm last month secured the order for the pedestal for the large Pingree memorial, at Detroit, Mich., and the Lantz mausoleum at Buffalo, N. Y. The latter will be an exact reproduction of the Nike Apteros at Athens, measuring 31x17 ft. on the ground. At their local plant they have under way, for various parts of the country, some of the largest and finest monumental work cut in Quincy for some years. The firm have on their books orders for as much monumental and mausoleum work, especially heavy memorials, as any firm in the country.

The Quincy Monumental Co., of which J. H. Bishop is proprietor, has lately erected a handsome memorial to "Patsy" Kerrigan, who, in life, won many honors in the roped arena. The monument is cut from dark Quincy and is of cottage design. It stands 12 feet high and rests on a 4x4 ft. base. A bronze bust of the pugilist, encircled with a wreath of laurels, surmounts the top of the memorial.

Daniel Harrington, of Harrington & Mallory, Saratoga Springs, N. Y., visited the trade during the past month, and left several substantial orders with local manufacturers.

At the annual meeting of Joss Bros. & Co., granite manufacturers, held last month, the following officers were elected: John Joss, president; James Joss, clerk and treasurer; John Joss, James Joss, Alexander Emslie, R. R. Smith and Jonathan Dinnie, directors.

The Granite Manufacturers' Association held its annual meeting Tuesday evening, August 12, and elected the following officers: Harry S. Nichol, president; Thomas F. Mannex, vice president; James Joss, treasurer; Thomas J. Dumphy, secretary; Harry S. Nichol, Thomas F. Mannex, James Joss, John C. Murray, William T. Spargo, Alex-

ander Falconer, Patrick T. Fitzgerald, Henry McGrath and Robert Mavers, Executive Committee; Thomas W. Smith, John A. McDonnell, Robert Mavers, Fred Barnicoat and P. W. Driscoll, Membership Committee.

The shipments of granite from this city, by rail, during July amounted to 12,161,885 pounds. These figures show an increase of 912,130 pounds over the amount shipped during the preceding month. The figures, however, do not begin to give the amount of granite shipped during July, although they may be justly said to represent the amount of finished product.

If it were possible to obtain the amount of rough and finished granite, the figures would be amazing. For several months back every available team has been used in carting rough stock to the tide water, there to be shipped for use on the mammoth breakwater in process of construction for the metropolitan sewer at Hough's Neck. The amount thus shipped in a month would figure several million pounds.

The shipments of finished work by rail during July was distributed as follows at the various depots: Quincy Adams, 4,853,745 pounds; Quincy Granite Quarries Co., via Quincy R. R., 1,770,620 pounds; West Quincy, 5, 537,520 pounds; total, 12,161,885 pounds.

Have Leased Three Lime Plants.

The Chattanooga Lime Co., Chattanooga, Tenn.—Replying to your inquiry in regard to organizing of our company, would say that we simply leased three lime plants in this vicinity for a term of years. These plants are fully equipped with everything to operate them with, and we have a combined capacity of 700 barrels a day. We also include fluxing stone in our plant.

A New Western Lime Plant.

T. J. Taylor, Orofino, Idaho.—I am putting in a lime plant with a capacity of 100 barrels a day, and will be ready to market lime about September 1.

Gets a Government Indorsement.

Wm. Wirt Clark & Son, Baltimore, Md.—You may be interested to know that the district commissioners at Washington were so well pleased with the "Krause" brand of American Portland cement that we have been furnishing at the new Government printing office at Washington since August, 1900, that they proposed to give us an order for 40,000 barrels of the same cement for district requirements for the next twelve months. Our factory was unable, however, to accept more than half the contract. This is the highest recommendation for a cement that any one could ask, and proves that it is suitable for the most important building construction as well as the finest sidewalk work.

Will Make Brick With Lime and Sand.

The Texas White Brick Co., Paris, Tex.—Answering your inquiry in regard to a new industry we have projected here, will say that we are organized for the purpose of manufacturing and selling brick and tile. We control a German process for making these articles out of sand and lime, by means of which we can have them ready for the building within twenty-four hours from the time we start up, using the machine. The process is what is known as the "Huennekes System." Our plant is not yet ready to make brick by this process, however, but soon will be. We might state, further, that our new process consists of steam treatment instead of burning, and we think we have something that will revolutionize brick.

Will Make Hollow Concrete Blocks.

Ricker & Bratnober Lumber Co., Waterloo, Ia.—In reply to your inquiry, would say we contemplate the manufacture of hollow concrete building blocks. We expect to sell this material to various yards to take the place of brick and stone.

New York Brick in the Dumps.

The Manufacturers and Agents Consolidated Brick Co., foot of W. 52d Street, New York City.—The brick business in New York is of so small a volume just now and at prices since July 8 which are \$1.50 a thousand lower on some grades than ruled for corresponding time last year, when the rules and shipments were enforced and controlled, that there is not much of interest in the market.

Cement.

How Portland Cement is Made.

The manufacture of Portland cement consists of calcining and burning to a cinder certain material, then grinding it to a very fine powder. This sounds simple, and one wonders why it is that something like a half million dollars is required to erect a plant to manufacture Portland cement, but when you follow out all the details, while they still remain simple to a certain extent, the reason for extensive outlay for machinery becomes apparent. As to the material that is used, it varies considerably; that is, there is to be found quite a number of different materials that when combined and burned will produce the material of Portland cement. There is a natural cement rock called hydraulic limestone found in various parts of the country that frequently has the right composition in itself for the making of cement; limestone and clay combined in proper quantities form material for cement; marl and clay are combined and made into cement, and furnace slag and other material is sometimes used for this purpose. In fact, the raw material for cement is so plentiful and so widely distributed that there is hardly a locality in the United States but what could supply abundance of material for the manufacture of Portland cement. If there were no more serious worries than getting the raw material for cement the manufacture of cement would be an easy proposition, and it is a mistaken idea for a man to feel that he has a fortune in his hands because he possesses land containing materials which when combined will make cement. Of course these things have their value, but the finding of raw materials is easy, and represents a very small part of the problems in the manufacture of cement.

Two of the Difficult Problems.

The two hard problems in connection with the process are in the grinding and calcining of the material, and where stone constitutes the original material for the cement the grinding process is a double one, for the material must be ground to facilitate the calcining, and then the calcined cinder must be ground to fine powder, the degree in fineness not being entirely settled—by most people to-day it is conceded as being impossible to grind it too fine. Most Portland cement to-day is ground fine enough to be bolted through a sieve containing 10,000 to 12,000 meshes to the square inch.

The Difference Between Making Portland and Natural Cement.

Up in the Lehigh Valley region of Pennsylvania, where American Portland cement was first manufactured, the material used consists of limestone, natural cement rock, shale and clay, and a description of the process there in detail will give a general idea of what may be called for in the way of machinery in any cement plant, and to fit the same process to other materials simply requires alterations in machinery for the first part of the process consistent with the material to be handled. It may be well to point out, too, as we go along, the distinction between Portland cement and natural cement, and the difference in manufacture, there being some chance for confusion otherwise, for the same material that is used in the Lehigh Valley for Portland cement—the natural cement rock—is also used to make natural cement. In fact, some of the plants are still equipped to make both natural and Portland cement. In making natural cement the hydraulic limestone or natural cement rock is simply burned in a kiln very much as limestone is burned to make lime, and then ground to a fine powder. In other words, the rock is not burned to anything like the degree of calcination applied to Portland cement.

In burning Portland cement clinker of the best quality, heat is required as high as 2,600 to 2,800 degrees Fahrenheit, and must be so applied and maintained that the material is decidedly vitrified.

The Meaning of Vitrification.

Now, vitrification in the language of the brick kiln attendant consists of burning the very life

out of the material; in the language of the expert clay-worker it means the stage between incipient fusion and viscosity, and according to the dictionary, it is the act or process of converting into glass by heat. In other words, we might say it is burned until the material melts and runs together becoming a hard, glassy substance. Now, then, while it is not such a difficult task to burn natural cement stone to a product, which, when ground, makes a very good cement, but it is a different proposition when we undertake to calcine the chunks of stone. In fact, it becomes a practical impossibility so long as they are in the form of chunks or lumps, because heat must be applied to practically every part of the stone to obtain the degree of vitrification required. This makes it necessary to pulverize the stone before burning. This is not the only reason for pulverizing, though, for pulverizing makes possible a thorough mixing that can not be obtained otherwise. This process to-day consists in the use of crushers, ball mills and tube mills for preparing the material for burning. The crushers are too well and generally known to require further description.

Machinery Used for Pulverizing Stone.

The ball mill consists of drums containing a large number of steel balls and the material is pulverized by the impact of the balls as the drum revolves. The tube mill is an iron cylinder or shell, usually 20 to 22 feet long and 4 feet in diameter, lined inside with flint stone and kept nearly half full of flint pebbles. This cylinder is mounted so as to revolve slowly and is inclined so that the material entering at one end works its way out at the other end, and is pulverized by the pebbles pounding it. These constitute what is known as the older process, and many of the plants of to-day are using what is called the Griffin mill instead of the ball and tube mills, while some use the ball and tube mills on the first end of the process, and Griffin mills in reducing the clinker. Then there are other mills for grinding, besides the Griffin that are used—the Sturtevant Mill Co. make an emery mill for this purpose, which they will, no doubt, be glad to tell about to those interested. The Griffin mill consists essentially of a roller operating against a ring or die by centrifugal force. The material is kept fed in between the roller and die by paddles and a fan blows the ground particles against a screen above where finer particles pass out. It is hardly possible to give a clear description of the operations of this mill, for it is necessary to see it in action to see and understand what it really does. After the material is pulverized, it goes into the kiln for burning. Before taking up that part of the proposition, however, it may be well to stop and point out where and how mixing is done to make the proper composition of the material.

How the Mixing is Done.

In many of the quarries there is a certain portion of the hydraulic limestone that is already of just the right composition for making Portland cement. When this is kept separate, so as to be worked alone there is no mixing required. Where it runs too low in lime, limestone is added, and where it runs too high in lime, a little clay or shale, or both are added, the mixing usually being done between the crusher and the mills that reduce the crushed stone to powder. The superintendent in charge determines the proportions of the mixture required and usually has appliances to weigh automatically the crushed hydraulic stone, also the other material, so that he can always get a positive mixture in the proportions required. By mixing at this point, and sending the mixture through the mills that reduce the crushed material to powder the mixing is made very thorough.

The Process of Calcining.

Portland cement burning in America to-day is done almost exclusively on what is called a rotary kiln. This kiln is nothing more nor less than a huge steel cylinder usually 5 to 7 feet in diameter and 60 feet long (a recent radical departure is the Edison kilns, Stewartsville, N. J., which are 150 feet long). This cylinder is mounted on roller bearings, that would remind a farmer's boy somewhat of a huge grindstone shaft mounting. It is not mounted level, but slightly inclined, so that the material will work its way through while the kiln is slowly rotating. The lower end of the kiln, being the discharge end, is naturally open, but it has a shutter or door consisting of a cast-iron circular form mounted on wheels and track and filled in with fire brick. Through this door or hood is where the fuel is introduced by means of

a pipe. Powdered coal is the fuel most generally used, but oil or gas, if it can be obtained, is the ideal fuel for this work. The upper end of the kiln is hooded in with a breech for receiving the smoke stack, and provision is also made for receiving the powdered material to be burned.

The cylinder is lined throughout with the best quality of fire brick, for, as has been stated, it requires a heat that frequently runs from 2,600 degrees to 2,800 degrees Fahrenheit. One of these kilns is supposed to burn clinker enough each day to make 150 to 220 barrels of cement. In other words, a cement plant containing ten modern rotary kilns is listed as a capacity of 2,000 barrels. As to the amount of fuel required, it is generally estimated that forty to fifty pounds is necessary to produce 100 pounds of clinker. The item this represents in cost depends very much on the cost of the coal, and it is hardly practicable to give an average that would be fair to all localities. Some roughly estimate that the item of fuel represents about two-fifths of the cost of manufacturing Portland cement.

Cooling and Grinding the Clinker.

The next step in the process of the manufacture is the cooling of the clinker, for it is obvious that it comes from this rotary kiln too hot to be handled before worked. This hot clinker consists of particles varying from the size of a pea to that of a walnut, and in some plants it is simply left in a pile to cool itself, but most modern mills adopt some artificial method of cooling. Some use a revolving cylinder and a blast of air for this work, and others use water for cooling, some by immersing a conveyor in water, and others by sprinkling the clinker with water.

After the burned clinker is cooled so that it can be worked again it is put through a grinding process that is practically a duplicate of the grinding process used in preparing it for the kiln. C. M.

The German Cement Industry.

The following report of Talbot J. Albert, Consul at Brunswick, to the department of the German cement industry, is of peculiar interest in connection with the recent high price of German cement in this country and the general scarcity of that material for immediate delivery in the cement trade here:

"The efforts of the German Cement Syndicate to control the production and to regulate the prices of cement have failed, and the syndicate has been dissolved.

"In the last two or three years, so many new factories have sprung up that it was impossible for the syndicate to bring them all under one management and the competition which has ensued has been disastrous to the trust. At the same time, dissensions have arisen within the syndicate. While there was little demand for the brands of the new factories which had been taken into the trust, some of the old factories were overcrowded with orders. Complaints arose as to the apportionment of sales, some works declaring that they did not receive the number to which, on account of their productive capacity, they were entitled.

"While in 1898 the dividends of the leading factories varied between 8 and 33 per cent., many now return nothing on the capital invested in them, others are issuing preferred stock to create new working capital, a number have stopped work, and one has gone into bankruptcy. The struggle, which has lasted since September, 1900, has culminated in a conflict of extermination between the larger factories and the smaller. Prices of cement have fallen so that they are now at least 20 per cent. below the cost of production of the most capably managed works.

"One factory reports that lime costs 120 marks (about \$30.00) per car, while the cement upon large orders is offered at 130 marks (about \$32.50) per car.

"Another factory reports that Portland cement is offered at 125 marks (\$29.75) per 10,000 kilograms (22,046 pounds) at the place of manufacture, while the cost of production for the same quantity varies from 180 to 190 marks (\$42.84 to \$45.22). These price reductions can have but one result: only those factories which have large capital reserves and can produce at the least cost will be able to sustain themselves.

"The domestic consumption and export in Germany amount to about 14,000,000 barrels, and the productive capacity of the factories is 30,000,000 barrels, or more than twice as much; consequently, the factories can only work at half their capacity, and the supply of cement on hand is so great that it has to be stored.

"The distribution of the factories in Germany and the growth of the industry since 1899 are interesting. In South Germany, there existed 20 Portland cement factories in that year and 25 in 1901. In this interval, the capacity of production increased from 5,000,000 barrels to about 8,500,000 barrels. In middle Germany, there were in 1899 about 28 factories, with a capacity of 6,100,000 barrels; in 1901, these had increased to 39, with a production of 13,000,000 barrels. In Schlesien, there were in 1899 six factories, with a capacity of 1,500,000 barrels; in 1901 there were 7, with a production of 2,000,000 barrels. North Germany had in 1899 fourteen factories, with a capacity of 4,000,000 barrels; these works in 1901 showed a production of 4,700,000 barrels. There are, besides, 11 large slack-cement factories in Germany, with a total production of 800,000 barrels.

"The competition between these different factories and the continued reduction in prices must inevitably result in the destruction of some of them. The labor market shows the effect of this struggle for existence. From 1895 to 1900, according to reliable estimates, the number of workmen employed in the factories increased from 30,000 to 35,000. During the past year, the number employed has receded below the last-mentioned figure, although in the meantime the number of factories has increased. One of the greatest complaints of the workmen is that the number of hands employed in each factory is constantly changing, so that the work is not steady, and no one knows when he will be discharged. Wages have fallen 25 per cent. since 1899.

"The decrease in building throughout Germany has also affected the industry, and the sales of cement in Berlin during the past year are said to have been one-fourth less.

"In order to stem further depression in prices, a meeting of the Northwest and Middle German Portland Cement Syndicate was held in Hanover on July 1, 1902. Thirty factories were represented by thirty-seven delegates. The object of the meeting was the creation of a price convention, which should go into operation on January 1, 1903. The meeting was of the unanimous opinion that no anticipatory sales should be made for the year 1903."

The Consolidated Cement Co., Eddyville, N. Y., is building a new dock near their cement plant.

The Carolina Portland Cement Co., Charleston, S. C., will build a new warehouse at Birmingham, Ala.

The Scotts Cement Post and Tank Co. will erect a factory at Kalamazoo, Mich., to manufacture posts and tanks from cement.

The Standard Portland Cement Co., Napier Junction, Cal., has let contract to erect iron work to McDermott Bros., of that city.

The New York Cement Co. is preparing to erect a new cement plant at Rosendale, N. Y. Archy McLaughlin will superintend the works.

The Buckhorn Portland Cement Co., Philadelphia, Pa., has been incorporated with a capital stock of \$350,000.00 to manufacture cement.

The work on the new Portland Cement Works, Florence, Colo., is being rushed, and the machinery has begun to arrive. It is to be one of the largest plants in that section of country.

The Apollo Cement Co. has been incorporated at Allentown, Pa., with a capital stock of \$500,000.00 to manufacture cement, lime, plaster, etc. The incorporators are: K. J. Kendricks, Armin Schötte and John Kendricks.

The Board of Directors of the Milwaukee (Wis.) Cement Co. took an annual outing recently at Berthelet. The directors are: Samuel Marshall, John Johnston, Howard Greene, B. K. Miller, Jr., and Joseph Berthelet.

It is now said that the Hecla Cement Co., Bay City, Mich., which has recently erected a cement plant at that place, will also equip a gas plant and put in an electric power plant to enter several lines of work for the manufacture of salt.

The West German Cement Co. has been incorporated at Ann Arbor, Mich., with a capital stock of \$1,000,000.00. The incorporators are: Linus S. Leach, Homer C. Millen, W. L. Leach. The purpose of the company is to manufacture cement.

The Century Carbonate Co. has been incorporated with principal offices at Burlington, N. J., to manufacture cement, plaster, etc. Capital stock, \$150,000.00. The incorporators are: Harold B. Ayers, Richard Furst and Franklin C. Woolman.

Plaster.

The Plaster Industry of New York.

A recent bulletin by Arthur L. Parsons, Mt. Morris, N. Y., describes the gypsum industry in New York State. According to this bulletin, the process of manufacturing plaster from gypsum takes on some of the characteristics of manufacturing Portland cement. The difference in the process as compared to that of the Kansas industry seems to be in the use of rotary kilns for calcining instead of kettles. For example, he says that at the mill of the National Wall Plaster Co., at Fayetteville, N. Y., what is known as the Cummer process is used. This process consists in crushing the gypsum rock in a Blake crusher to about the size of hickory nuts. This material is then taken to a cylinder about 27 feet long by 4 feet in diameter, which revolves over a fire. The smoke is carried through the cylinder so as to utilize all the heat available, and is then taken off by a flue. This cylinder is inclined slightly so that the material runs from one end to the other. The temperature at which gypsum is calcined ranges from 600 degrees to 800 degrees Fahrenheit. From the calciner the material is taken to a large cooling bin made of brick. This bin is about 30 feet long by 6 feet wide, by 20 feet high. The heat then permeates the entire mass of rock, calcining the inner portions of the small pieces. The material is drawn from the bottom of the cooler through gates and taken by a worm conveyor to the mills, where it is ground. It is then taken to the storeroom and put in bags for shipment.

The capacity of the mill is fifty tons a day. The annual production is about 50,000 tons a year. This calcined gypsum is shipped, to a considerable extent, to cement manufacturers, and is utilized by the National Wall Plaster Co. for the manufacture of hard finish. For the manufacture of hard finish, it is mixed with certain proportions of sand, clay and a patent retarder.

The regular readers of this paper will remember that in the description of the gypsum plaster process in Kansas by Professor Grimsley, which appeared in ROCK PRODUCTS for June, the process starts off pretty much as the one described here, so far as the crushing machinery is concerned, but the crushing process in the Kansas mill seem to be carried further than here, the material passing from the crusher to a buhr mill where it is ground into flour, and it goes into the calcining kettle in this form. Then, in calcining out in the Kansas district kettles are used that are 8 feet in diameter and 6 to 8 feet deep, and the heat used only reaches about 350 degrees Fahrenheit, while in the process described in New York the cylinders used seem to be of the same style as the rotary kilns used for calcining cement, though they are materially smaller. Also, the temperature ranges from 600 to 800 degrees according to this report, being more than when kettles are used, but much less than is required for cement. From the description of other plants in New York, it appears, however, that some use the kettles there and it is not definitely stated whether or not there are any others using this rotary kiln than The National Wall Plaster Co.

Speaking of the companies, and the developments in gypsum, the report says there are five companies with quarries near Fayetteville, N. Y. The oldest one of these quarries belongs to Mr. F. S. Severance and has been worked for more than sixty years. The gypsum bed at this quarry is about 60 feet thick and consists of eight layers lying in a thickness from 60 to 80 feet. The gypsum is covered with about forty feet of shaly rock together with hydraulic limestone.

The quarries of the National Wall Plaster Co. are immediately adjoining the Severance quarries and the deposit is practically the same. East of the National Wall Plaster Co. are the beds of the Adamant Plaster Co.

In the same territory are also the quarries of C. A. Snooks and C. Snooks, in which the gypsum deposits are practically the same as in the other quarries.

The Cayuga Land Plaster Co. has gypsum quarries about four miles South of Cayuga, which produced at the time of this report an average output of about 10,000 tons of plaster and 5,000 tons of rock gypsum.

The Wheatland Land Plaster Co., Mumfords, N. Y., has a plaster mine about three and one-half miles from Caledonia, on what is known as Allen's Creek. The gypsum at this place is in three layers, the best quality being in the middle where the deposit is about six feet thick. The annual production as given is about 10,000 tons.

The rock is drilled by a hand-power twist drill. The blasting is accomplished by dynamite exploded by a battery. The rock is hauled, on cars holding about one ton, by mules to the mill, which is on the opposite side of the creek. The largest pieces of rock are run through a Blake crusher, and from that directly to the mill. The capacity of this crusher and mill is about forty tons a day. The smaller pieces, up to the size of a man's hand, are taken to a crusher of special design made to order by a firm in Caledonia. This crusher consists of a corrugated cone of iron in which a series of disks rotate. These disks are about two inches thick and one foot in diameter, having teeth similar to saw teeth. They are fastened to a square shaft and pulverize the rock as fast as a man can shovel it in.

It is said that an interesting feature of this mine is the fact that three acres of old tunnel chambers is devoted to growing mushrooms.

About a mile East of this property at Garbuttville, is another gypsum deposit, belonging to the Lycoming Calcining Co., which is a deposit of practically the same character and quality of that described, and the work is carried on in pretty much the same manner.

At Oakland, N. Y., there are three companies engaged in mining and calcining gypsum. The English Plaster Co., and the Oakfield Plaster Manufacturing Co., and the Genesee Plaster Co. It is said that the gypsum at this place is the whitest that is found anywhere in the State, and it is also reported that about eighty feet below the first bed another bed of gypsum is found that is about ten feet thick, but this bed has not yet been developed. The oldest works at Oakfield are those of the English Plaster Co., which is also said to be the largest, producing about 10,000 tons of plaster of Paris annually.

The Oakfield Plaster Manufacturing Co. operates three mines and calcines in kettles of ten tons capacity, and also produces annually something like 10,000 tons.

The Genesee Plaster Co. also uses kettles for calcining; in fact, reports state that none of the plants here use the Cummer process.

The Rubey Stucco Plaster Co. recently completed a modern plaster plant at Ferguson, Okla. This company was organized April 1901, and its president is Mr. T. E. Rubey, at that place.

Charles Dillingham, Ogdensburg, N. Y., recently purchased the Nightingale Cold Storage Building of that place and will convert it into a plaster mill.

The Southern Wood Fiber Plaster Co. has been organized at Jackson, Miss., with a capital stock of \$10,000.00. The incorporators are: C. A. Bonds, Wm. Anderson, J. C. Hood, A. A. Wood and W. J. McGee.

The Consumers Gypsum Co. has been organized at Columbus, Ohio, to manufacture gypsum plaster. The officers and directors of the company are as follows: N. J. Ruggles, Columbus, president; John Elcessor, Pittsburg, vice president; J. G. Powell, Toledo, secretary; E. J. Forrester, Cleveland, treasurer; E. H. Fishback, Toledo, manager. Directors: W. M. Holmes, Pittsburg; E. J. Forrester, Cleveland; L. E. Fishback, Toledo; N. J. Ruggles and E. T. Bingham, Columbus; J. W. Elcessor, Pittsburg, and L. G. Powell and E. H. Fishback, Toledo. It is said the headquarters of this company will be at Port Clinton, Ohio, where a plant will be built. The capital stock of the company is \$60,000.00, and the people mainly interested in this move represent four plaster mixing plants, the Rock Plaster Co., Columbus, The Forrester Plaster Co., Toledo, and the Crown Plaster Co., Pittsburg, and the Fishback Plaster Co., Toledo.

The works of the Mississippi Portland Cement Co., at Suisun Cal., were formerly opened August 10. Colonel Geo. Stone and N. L. Bell, president and secretary respectively of the company, take a party with them from San Francisco to attend in the formal opening of the works.

Lime.

The Bay Shore Lime Co., Detroit, Mich., will increase its capital stock from \$150,000.00 to \$250,000.00.

The Lagarde Lime and Stone Co., Anniston, Ala., is equipping its lime kilns with the Eldred process for burning lime.

Clark & Taylor, of Los Angeles, Cal., have recently employed Byron Eldred to design for them a special kiln for a peculiar formation.

The Lagarde Lime and Stone Co., Gadsen, Ala., is erecting four new lime kilns. They work some 200 men regularly and the output is shipped away.

Mr. W. G. Cook, of the Cook's & Brown Lime Co., Oshkosh, Wis., has accepted the office of treasurer of the Southern Fire Brick and Clay Co., of Chicago, Ill., with offices in the Teutonic Building.

The Chattanooga Lime Co., Nashville, Tenn., has been incorporated with a capital stock of \$25,000.00. The incorporators are: H. H. Buquo, M. J. Buquo, J. B. Brighams, Sam J. Buquo and C. G. Buquo.

D. G. Cutler & Co., St. Paul, Minn., has been incorporated to deal in lime, cement, salt, etc., with a capital stock of \$200,000.00. The incorporators are: Dwight G. Cutler, William E. Wagner, Jane T. Cutler, all of Duluth.

Bryant & Kent, of Boston, Mass., are putting up a plant for the production of lime. The hydrated lime is to be manufactured by the Eldred process for hydrated lime. The plant will have a capacity of 75 tons a day.

The Dominion Iron and Steel Co., Sydney, N. S., has just added a lime plant of fourteen kilns, equipped by Byron Eldred, of Boston, Mass., which is to be operated for their own exclusive use, the lime being used in their enormous plant.

We are informed that H. E. Kendrick, Kalamazoo, Mich., has accepted the position of general manager and treasurer of the Scioto Lime and Stone Co., of Delaware, Ohio. He is to have full charge of the plant, which reports state is to be considerably enlarged in the near future.

Michigan Lime Lights.

While in Northern Michigan recently, I had the pleasure of looking over the plant of the Michigan Lime Co., of Petoskey, through the courtesy of Manager Curtis, the office of this company being right under the eaves of the principal hotel in Petoskey. The fact of the matter is, the front yard of this hotel is owned by the Michigan Lime Co.

The quarries extend a mile along the most beautiful view of the high-toned summer resorts of Petoskey, Harbor Springs and Bay View. In fact, when the wind is blowing the right way, you can get a dash of pink tea from the red-stocking point at Bay View.

Mr. Curtis rather jollied the ROCK PRODUCTS man when he arrived. He said: "I like ROCK PRODUCTS very much. One issue I was tempted to sit down and write you a letter. The only article in that issue on lime was one on lime as a fertilizer. Then I realized that you can't cover all subjects in one issue." But you can understand how Mr. Curtis felt, because he not only has a fortune in having a stratum of rock which produces the best quality of burnt lime for building purposes, but has three stratas of rock. The paper mill man and the iron people, who use flux, are also big customers of his, and swear by the product of the Michigan Lime Co.

When you see the hill and the little impression that has been made on the rock on the property of this company, you are impressed with the fact that they can furnish lime for a long time to come. They have a capacity of about 500 barrels, and are building a new kiln, which will increase it.

Speaking of trade conditions, Mr. Curtis said they were very busy, as were their neighbors, the Bay Shore Lime Co., located at Petoskey, who are not so far away, but too far away to get to their plant and catch the train necessary for the writer. Messrs. Schu, who control this plant, are up-to-date,

active business people, and their operations are on large proportions.

In looking over the kilns of the Michigan Co., I found, while Curtis believed in modern methods and his affiliation with the lumber business as an up-to-dater, that they had built within the past two years an old-style lime kiln, and asking him about the matter, he said: "Well, while I am a believer in new systems in force, there is no better lime made than comes from this lime kiln operated on the same old plan as those doing business twenty years ago."

Lime in Chicago.

There seems to be a merry war going on in the lime business in the city of Chicago, notwithstanding the fact that some efforts have been made toward co-operation among the limemakers in that city. The anxiety of some of the trade early in the spring to get contracts, landed them with prices from 38c to 45c for short barrel, while there has been more orders than they can get filled this year, has caused those who sat patiently and waited until the labor difficulties settled to get from 55c to 60c. Now, there is too great a spread between these prices, and it means one of two things: Either the wise man who awaited his turn is getting all the profits, or the other fellow isn't getting any. Of course, there is a difference in the package and the amount of lime in the barrel, which accounts for a part of the spread. And, even at 60c, the price of lime at this time would not pay big dividends to the trade.

Advances in Labor.

The advanced prices in hauling and labor in the stone and lime trade of Chicago have made it necessary to advance prices all along the line. Why, I know of where stone is being delivered, for instance, where the teaming contractors get as much for the hauling as the stone man gets for the stone, including profit, so you know that union of labor is making it hard for this trade to do business on a profitable basis.

Modern Methods.

I find in looking over the Chicago trade there is a tendency to do business on slipshod methods. Instead of charging for extras, which are as much a part of the cost as making and handling the rock product, it all goes into the wash tub, and I guess our friends think "it will all come out in the wash." But, unfortunately, when labor is so high, and the incidental expenses are not reduced, when you add to your cost basis of material, your labor cost, then your fixed expenses, then your profit, there is little chance for getting rich, in competition with some

of the lime people in the trade; and this is especially true of the stone trade, rather than the products of the stone.

The Limestone Production of 1901.

In the report of the stone industry for 1901, issued by the United States Geological Survey, it was shown that the production of limestone for the year increased more than \$6,000,000.00 over that of 1900; and of the forty-one States reporting the limestone production for the year 1901, thirty-five of them reported an increased production, showing that the increase has been general.

The States showing the greatest production rank as follows: Pennsylvania, Indiana, Illinois, Ohio, New York, Missouri and Wisconsin, being the same order of rank as held in 1900. Each of these States showed a production of above \$1,000,000.00 for the year 1901.

In the details of the report just pointed out, while Pennsylvania stands first as a lime-producing State, Indiana ranks first in the production of building stone and other limestone products aside from lime.

The value of limestone used for road material showed an increase of over \$1,000,000.00, and the value of that used for blast-furnace flux also increased nearly \$1,000,000.00. Over half of a million dollars worth of limestone, which is represented in the tabulated report as being used for "other purposes" was used by the Portland cement manufacturers of the country.

Pennsylvania showed a decrease in the amount of lime burned in 1900, but the increase for 1901 not only covers this deficiency, but is over \$100,000.00 more than was burned in 1899. Quite a lot of Pennsylvania stone was used in the manufacture of cement.

Illinois produced more limestone road building material than any other State, and the next State in road material was Ohio, with Pennsylvania third in this article. Illinois showed a slight decrease in the amount of stone used for fluxing, and an increase of over 50 per cent. in the amount burned into lime.

The increase in the value of limestone reported from Michigan is due largely to the inclusion in the total limestone used by Portland cement manufacturers, the statistics of which had not been gathered before this year. The same condition holds true in the increase in New York, where the amount burned into lime actually decreased. In fact, in most of the States manufacturing cement, the large increase can be accredited to the cement industry.

The lime and limestone industry, as a whole, makes up quite an important item, as will be seen by a study of the figures and the totals especially, which show \$8,000,000.00 for lime and a grand total of over \$26,000,000.00 for limestone used.

Production of Limestone in the United States by States and Uses During 1901.

State or Territory	Building Purposes	Flagging and Curbing	Riprap, Rubble, etc.	CRUSHED STONE			Lime	Sold to Lime Burners	Flux	Other Purposes	Total
				Roadmaking	Railroad Ballast	Concrete, etc.					
Alabama.....	\$ 42,695	\$..	\$225	\$..	\$..	\$2,500	\$201,586	\$150	\$ 354,267	\$ 18,000	\$619,423
Arizona.....	3,466	1,020	320	1,000	..	..	30	..	..	..	300
Arkansas.....	1,500	..	6,366	145,225	60,900	5,023	343,625	2,836	47,830	32,150	645,455
California.....	..	..	3,141	100	..	..	102,466	4,480	121,839	13,773	245,799
Colorado.....	..	..	..	..	..	..	139,374	38	1,012	..	140,424
Connecticut.....	..	..	..	..	..	..	39,150	..	..	..	51,870
Florida.....	3,600	..	6,250	3,670	2,750	..	65,888	..	3,160	..	85,629
Georgia.....	100	..	..	..	9,860	3,721	25	..	..	..	21,251
Idaho.....	384,949	101,410	477,435	452,143	478,452	225,151	504,018	..	103,729	66,510	2,793,837
Illinois.....	2,123,237	149,363	61,526	181,696	29,042	15,002	223,340	1,260	193,469	15,131	2,993,186
Indiana.....	272,501	8,117	85,342	83,055	30,562	70,285	221,760	..	..	5,862	777,484
Iowa.....	29,730	16,872	27,147	14,329	107,904	15,050	6,350	..	..	604	478,986
Kansas.....	19,425	10,697	5,500	60,423	29,622	9,370	12,290	..	6,998	5,242	199,567
Kentucky.....	14,138	1,798	420	43,887	8,000	1,776	709,251	500	5,521	..	715,272
Maine.....	7,224	..	453	..	..	..	307,657	4,007	700	..	382,381
Maryland.....	47,785	380	5,098	31,605	18,290	150	234,261	..	1,843	108	244,039
Mass.....	375,308	20,773	39,447	17,918	200	75,643	136,160	136,173	13,488	101,399	565,931
Michigan.....	377,146	73,197	56,345	105,435	116,293	73,742	546,549	..	7,607	9,675	1,222,778
Minnesota.....	7,336	30	1,100	..	..	..	22,250	..	113,250	..	1,362,272
Missouri.....	44,015	810	26,312	10,904	5,025	51,380	500	4,281	10,640	850	154,717
Montana.....	2,460	61	750	1,275	650	..	62,707	1,708	40,587	199,540	309,738
Nebraska.....	265,024	5,055	13,997	188,277	146,077	293,530	631,358	46,327	16,190	132,881	1,738,716
N. Carolina.....	..	..	..	4,668	..	..	3,598	..	..	..	8,266
Ohio.....	341,389	13,869	41,451	489,940	299,599	64,347	726,883	24,822	550,346	53,856	2,606,502
Oklahoma.....	4,147	2,716	660	9	24,525	..	..	..	..	500	32,497
Oregon.....	..	..	..	12,000	..	10	12,420	..	..	..	24,520
Pennsylvania.....	192,972	7,321	29,291	221,032	273,260	252,603	1,249,996	151,104	2,243,692	460,116	5,081,387
Rhode Island.....	..	..	..	..	..	..	37,798	..	232	..	38,030
S. Carolina.....	..	..	..	1,000	..	..	27,500	..	..	..	28,500
S. Dakota.....	225	..	..	..	..	..	13,850	..	39,725	..	53,780
Tennessee.....	40,258	775	2,915	1,760	35,425	4,935	181,219	..	62,640	1,000	330,927
Texas.....	45,630	3,117	7,215	3,900	..	5,350	93,587	..	50,294	565	209,658
Utah.....	6,629	..	..	23	..	..	36,910	..	34,588	750	78,900
Vermont.....	64	..	..	610	..	..	24,400	..	..	..	25,138
Virginia.....	2,270	25	27,650	225	75,695	2,065	230,810	8,758	595,929	42,750	986,177
Washington.....	..	..	..	..	..	840	210,341	6,192	16,514	700	234,587
W. Virginia.....	..	..	..	..	..	..	..	..	..	..	..
Wisconsin.....	263,687	46,571	97,213	222,177	6,500	40,052	522,661	..	23,682	2,905	1,225,448
Wyoming.....	..	..	100	..	..	25	1,215	..	..	..	1,340
Totals.....	\$5,219,310	\$463,925	\$1,024,109	\$2,298,286	\$1,758,541	\$1,214,815	\$8,204,054	\$392,976	\$4,659,836	\$1,171,045	\$26,406,897

Quarries.

Quarries of Southeastern New York.

We are in receipt of a report of the quarry industry in Southeastern New York with the compliments of the author, Edwin C. Eckel, of the United States Geological Survey, Washington, D. C. The area discussed by this report is relatively small, but it contains representatives of all the geological systems from the pre-cambrian to the frias which occur in the State of New York. The map accompanying the report covers Westchester and New York Counties and a portion of Rockland, Orange and Putnam.

Among the quarrying industries in granite, including gneiss, diorite, etc., mentioned, are the following:

Near Suffern, Rockland County, there are several quarries worked by Rice Bros., and the Hillburn Granite Co. The rock is the pre-cambrian, gneiss consisting chiefly of quartz plagioclase and hornblende. It is of a bright reddish color, and part of it is used rough dressed for foundation and wall work, but a considerable quantity is cut by Copeland & Son, at Suffern, for monuments, etc.

Near Dunwoodie, Westchester County, are quarries owned and operated by Hacket Bros. Stone from this quarry has been used in a number of buildings and as much railroad work. Also some polished columns have been turned out, the polishing being done in New York City.

Dennis Cahill, of Yonkers, N. Y., has a quarry on Midland Avenue, which has supplied much railroad work and also cut stone. This stone is gneiss and stands bush-hammering well, that being about the highest finish ever given it.

E. O. Rourke, of Dunwoodie, operates a quarry on the Stewart estate getting out rough and cut stone.

What is known as the Collins Quarry is located about a mile Northeast of Silver Lake near White Plains, from which is obtained a reddish gneiss of the Yonkers type.

Near Hartsdale is what is known as McCabe's Quarry from which is taken Yonkers gneiss of a fair quality. It is used generally for local road building.

Edwin Ash operates a group of quarries on the granite area Northeast of New Rochelle, getting out stone for foundation work and for his own use in the monument work.

Fairchild Bros., of Mt. Vernon, operate a quarry near their place getting out a tough compact granite of a bluish color. They also operate a crusher and most of the product of the quarry is crushed and used for road building.

What is known as King's Quarry is owned by the King Granite Co., and was operated at the time of this report under lease by Doer & Sons, of New Rochelle. The quarries are located near Garrison.

Daniel E. Donovan has a granite quarry on Round Island, Rockland County, which has furnished large quantities of road material.

The Pochuck Granite Co. operates quarries on Pine Island, Orange County, producing granite.

W. H. Campbell, of Larchmont, Westchester County, operates a quarry near that place, getting out what is known as Harrison diorite, which is a medium grain granite diorite.

Operating in sandstone, there is near Monroe, Orange County, two quarries as what is known as Bellvale flags. One is known as the Davidson Quarry and the second, that of O. H. Cooley.

Near Tuckahoe, Westchester County, is a quarry operating in limestone by Norcross Bros. There is also a mill equipment in connection with the quarry for sawing, planing, turning and rubbing stone. Quarrying operations are carried on by the use of channelers.

A quarry in this locality, regarded as belonging to New York Quarrying Co., is operated under lease by O'Connell & Hillery and the product is crushed stone and lime.

James O'Connell operates a quarry near White Plains, producing crushed stone and burning lime.

Henry Marks and the Sing Sing Lime Co.

operate quarries near Ossining, part of the product being shipped for use as flux and part being burned into lime.

The South Dover (N. Y.) Marble Co. operates a quarry near Wing Station getting out marble for structural purposes.

At Tompkins Cove, Rockland County, The Tompkins Cove Stone Supply Co. operates its quarries on the West shore of the Hudson River. The material is a light blue limestone and is used for road material.

News from Numerous Points.

The shipman Quarry Co., Chester, Conn., is working on an order for 18,000 feet of curbing for Springfield, Mass.

B. N. Detweiler, of El Paso, Tex., has leased the marble quarry near Alamogordo, and it is said he will install machinery for sawing and polishing.

The firm of Smith & McKenzie, Montpelier, Vt., operating the Blue Mountain quarry, has been dissolved, D. D. Smith taking August Morrison, Graniteville, as partner.

Hughes Bros. & Bangs, who recently ceased operations at their quarries at Bellevue, Del., have secured a contract for building some piers and have re-opened quarries.

T. A. Berkabile has been appointed receiver of the quarrying firm of Gregg & Haislei on petition by George & Gregg for receiver and division of partnership property, etc.

The Decarbonated Limestone Co., Waynesburg, Pa., has been overhauled and equipped with crushers and have improved their plant generally for quarrying and crushing stone.

S. S. Little, acting for the city of Menasha, Wis., has closed a deal for the quarry of Gilbert Jones, near that place, and will operate it for stone for macadamized streets.

The Red Stone Quarry, North Conway, N. H., recently secured contract for over 700 carloads of cut stone, which with other contracts on hand, makes them over \$1,000,000.00 worth of work, enough to guarantee steady work for three years.

The property of the Pennsylvania Blue Quarry Co., Stroudsburg, Pa., was recently sold at constable sale and purchased by some of the various parties holding building claims against same, among them being Lewis Peters & Co. and Daniel Brush.

Reports from Houghton, Mich., state that W. E. Parnall and others have bought an interest in the Jacobs Portage Red Sandstone Co., of which J. H. Jacobs, Marquette, Mich., is president. Operations in the future will be carried on to a greater extent than in the past.

The John O'Laughlin Stone Co., Ives Grove, Wis., is seeking to have the Northwestern Railway make a better rate on crushed stone, as are also other stone companies in that locality including the Horlick Stone Co. and the Reichert Stone Co. It seems that the railway company has recently doubled the rate on stone, and the quarrymen have suffered in consequence.

The Chas. H. Moore Granite Co. has been incorporated at Granite, Okla., with a capital stock of \$30,000.00. The incorporators are: Charles H. Moore, Montpelier, Vt.; Jacob Mulvane and W. F. Evans, Topeka, Kan.; C. H. Henley, Lawrence, Kan.; T. J. Molinari, Granite; W. A. Shutte, E. A. and C. O. Blake, El Reno, O. T.

Chrome in Turkey.

Consul Rufus W. Lane writes from Smyrna that chrome is found in both European and Asiatic Turkey in considerable quantities, but has been worked only in districts within easy reach of the sea. The principal workings are in the neighborhood of Salonica, Broussa and Macri. The largest deposits are said to be in the district of Denizlie, but the Government has given no permits to work this region. The Denizlie ore has yielded in tests as high as 56 per cent. per oxide of chrome, and is a surface deposit. This district has recently been discovered, and is supposed to be a continuation of the Macri chrome stratification. The deposits are some distance from the railroad, and the cost of transport to Chardak, the nearest station on the Smyrna Ottoman Railroad, is close to 36s. (\$8.86). The Broussa mines are comparatively new, and most of their output has gone to the United States. The proprietor of the Broussa mines is Ragoub Bey, a functionary in the Sultan's palace. Most

of this ore is handled by J. W. Whittall & Co., of Constantinople, who are the agents of Ragoub Bey. The Bey has the advantage over his competitors, as he pays no royalty, the mines having been made a present to him by the Sultan.

The Macri district is controlled by Paterson & Co., of Smyrna, who own a number of mines and "permits of research." They also hold mines at Salonica and Broussa.

The Government collects a mining royalty of 20 per cent. on chrome, and a customs duty of 1 per cent.

Mica in French Guinea.

Consul General Robert P. Skinner writes the department from Marseilles, in regard to mica in French Guinea, and makes the following bulletin, which has been supplied by Dr. Heckel, Director of the National Institute at that place:

"French Guinea possesses important deposits of mica, recently discovered, the exploitation of which should be as important for the country as the colony. Samples of favorable appearance are at the disposition of all who care to see them at the Colonial Museum, 63 Boulevard des Dames."

It is added that any one desiring to correspond on the subject of the exploitation of these mica deposits should address inquiries to M. Famechon, directeur des douanes, at Conakry, French Guinea, Africa.

The Manganese Industry.

The total production of manganese ores in the United States during the year 1901 amounted to 11,995 long tons, valued at \$116,722.00, as compared with 11,711 long tons, valued at \$100,289.00, in 1900. The increase of the production of 1901 was only 224 tons or about 2 per cent., but the average value per ton increased from \$8.52 in 1900, to \$9.73 in 1901, or \$1.21 per ton.

In 1901 eight States contributed to the total, Alabama, Missouri and Utah being added to the 1900 list. Montana, a former producer, reported no ore mined. As in 1900, Virginia heads the list of production, Georgia being second and Utah ranking third; the combined product of which three States amounted to 10,849 tons, or 90 per cent. of the total for the United States. At no time since 1891 has the annual production of manganese ores exceeded 16,000 long tons, which suggests that the domestic manganese industry has not developed into one of importance as far as quantity is concerned. The bulk of the supply still comes from foreign countries.

The amount of manganese ores imported in the United States during the year 1901 was 165,722 long tons, valued at \$1,486,573.00, or \$8.97 per ton, as compared with imports of 256,252 long tons, valued at \$2,042,361.00, or \$7.97 per ton, in 1900. The United States is the largest producer of steel in the world, and in the production of this steel a large amount of ferro-manganese and spiegel-eisen is used. In 1901 the foreign ferro and spiegel were attractively low in price, so that a number of the larger companies preferred to import such manganese metal as might be required rather than to manufacture it. This will account for the falling off in imports of manganese ores in 1901.

The principal shippers to the United States in 1901 were Brazil Russia, Cuba, Turkey, Chile and India, in the order named. The importation by customs districts shows that over half of the total foreign manganese ore was received at the port of Baltimore and about one-seventh at Philadelphia. The average domestic production for thirteen years was 13,949 long tons, valued at \$125,773.00, and the average imports in the same period amounted annually to 92,413 long tons, valued at \$853,627.00. Manganese ore to the amount of 21,627 long tons was imported into the United States from Cuba in 1901, and it is probable that Cuba will continue to be an important source of supply of manganese ores of the United States. The Russian Empire is the largest contributor of manganese ores, nearly all the world's output being credited to that country. The greatest portion of this ore comes from the Caucasus district, followed in order by South Russia and the Ural districts. The imports into the United States from Russia in 1901 amounted to 32,600 long tons. According to the latest obtainable figures the production of manganese ore for 1901 may be estimated for the most important producing countries as follows: Russia, 646,582 long tons; India, 130,670 long tons; Brazil, 95,710 long tons; Spain, 90,224 long tons; Germany, 58,269 long tons; Turkey, 38,100 long tons; Chile, 31,477 long tons, and Cuba, 25,183 long tons.

Our Travelers.

The Way Things Seem to a Newspaper
Man When He is Out Among the Trade.

THE HOME OF CEMENT AND SLATE.

The Lehigh Valley of Pennsylvania is not only the place where the American Portland cement industry originated, and the center of that industry to-day, but is one of the busiest spots in the country at this time. Everybody making cement is busy, and has been busy all the year, because there has been a demand in excess of the supply, and cement for immediate shipment has been a very scarce article all summer. There is nothing more natural than that the men in the industry here should be the first to feel the effect of this strong demand and take steps to increase the capacity of their plants. And they are doing it. It is not only new cement companies here and there, but the old companies are building new plants, and enlarging old ones at such a rate that manufacturers of cement machinery are to-day apparently busier than anybody else besides the cement men themselves. Builders of cement plants not only offer to pay premium prices for machinery to secure prompt delivery, but keep telephone and telegraph wires hot with urgent requests for material to keep the plant construction moving along.

SOME VERY BUSY PEOPLE.

One of the busiest men in this busy cement country is Charles A. Matcham, manager of the Lehigh Portland Cement Co., of Allentown, Pa. In fact, he was so busy I was not able to catch up with him either at the office or at the works. Secretary George G. Sykes, of the company, was found at the office, and he said that they were simply swamped with orders and they were not able to come anywhere near supplying the demand for immediate shipments. I also found Colonel Harry C. Trexler, president of the company, up at his lumber office. He is not only the lumberman of the town, but has extensive saw-mill interests up in the country, and also has some farms scattered about. Besides all that, he is president of a cement company that has a capacity of 3,000,000 barrels a year. He is an extremely modest man; so much so that I have been wondering how he happened to put on the uniform when he was commissioned colonel. As a case in point, he tells it on himself that sometimes he goes out to one of his farms and meets his tenant and his tenant is not aware who he is. When I saw him he was lounging around his lumber office more like a visitor than the boss of the institution, and he contends that he lets the other boys run the lumber business while he looks on. In regard to cement, he says he is striving to have his plants equipped with the best to be had in the way of machinery and appliances so that they can make cement as cheap, if not a little cheaper than any one else. With the additional mills that have been built this year they have a capacity, as stated, of 3,000,000 barrels a year, and the colonel says this is as much capacity as he wants, and he desires that in the future all the energies of his company be expended toward keeping equipped more for economical manufacture than for increased output.

The Lehigh Portland Cement Co. now has, all told, forty-two kilns in its equipment, being the second largest in the country, the Atlas coming first with about 110 kilns.

THE PIONEERS IN CEMENT.

Another busy man is Manager John W. Eckert, of the American Cement Co., who lives at Allentown, although the mills are at Egypt. I managed to catch up with him one night after supper, but he was in a rush and said: "Go see Lesley; he is the cement editor of our company." Mr. Eckert is the pioneer practical man of the cement industry of the Lehigh district to-day.

The Nestor of the cement industry of the region, David O. Saylor, is dead, but Mr. Eckert and Robert W. Lesley were the founders of the American Cement Co., which is one of the pioneer companies, and is a large producer. Mr. Eckert has therefore been identified with the practical ce-

ment industries in this district longer than any other man, and it is said by those who know of the history of the industry to be the pioneer of to-day. He has just recently completed a new plant for the company at Egypt, and has another plant under process of construction, which, together with the attention required at the various plants, makes him a very busy man. I learned, incidentally, that he has a fondness for horses, which he humors to such an extent that if he will take time to come down to Kentucky for a few months, would certainly obtain for him the degree of colonel.

A GIGANTIC INSTITUTION.

My first start to see cement mills from Allentown was over the trolley line to Northampton and Siegfried. Getting off at Northampton there was a walk of about a half mile up the valley to the works of the Atlas Portland Cement Co., and the view was well worth the walk. The Atlas works are the biggest in the district, and the biggest in the country, producing nearly 8,000 barrels a day. As I walked up the valley I could see the quarries on the opposite side and the office on my side, while the whole valley seemed to be full of cement works, and I don't know but what that is the best short description one can give of it; that is to say, it is a valley full of cement works. This company claims the distinction of being the first to bring the rotary kilns to a point of success. The experiments were made at their old plant at Coplay, and, as a result of these experiments, they built the mammoth plant at Northampton. The head offices of the company are at New York City, and in addition to the works here, they have just finished equipping a plant of 4,000 barrels capacity at Hannibal, Mo., and have broken ground for a duplicate plant of 4,000 barrels at that place. I was also informed that they had foundations laid at the Northampton plant for twenty more kilns, but have no information as to their intention to install them at once. In fact, all I know about the inside of their plant is from hearsay, because they do not permit visitors and do not indulge freely in giving information. The combined capacity of their plants to-day is given as 11,000 barrels a day.

THE TOWN OF SIEGFRIED.

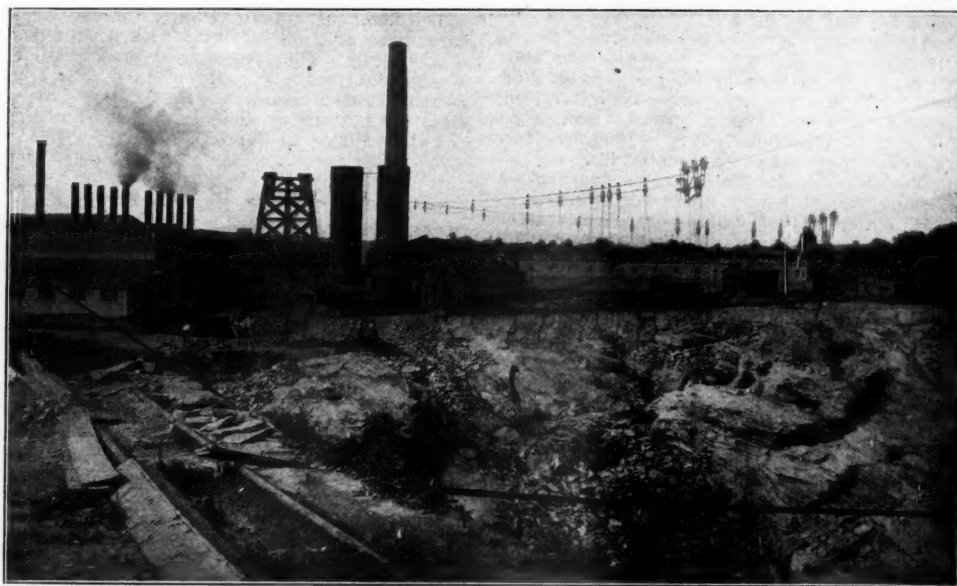
On the same trolley line, a few miles further up the Lehigh Valley is a town called Siegfried, which has been incorporated as the Burrough of Alliance, but the Post Office Department refused to recognize the name, so they still call it Siegfried. Just before the car reached the end of the line I saw a sign which read, "Cement News," and as that was what I was looking for I jumped off and went in to investigate. I found it was simply the name, and a very appropriate one, of the local newspaper, edited by H. S. Rice. Here I received walking directions for finding the two cement plants located at this point, The Lawrence Cement Co. of Pennsylvania, and the Bonneville Cement Co. The Lawrence Cement Co. of Pennsylvania has a plant equipped for making both natural and Portland cement, with a capacity of about 2,000 barrels a day. The main offices of the company are at No. 1 Broadway, New York City. The local office at Siegfried advised me that they, in com-

mon with everybody else there in the cement business, are rushed with orders. Over the hill from this plant, and in view of the Atlas works, is the plant of the Bonneville Cement Co., which has its main offices in the Fidelity Building, Philadelphia, Pa. This plant is equipped with five rotary kilns for making Portland cement and also has equipments for making natural cement. This plant is one of the oldest in the country and the superintendent invited me out to see the quarry from which they obtain their material. This quarry starts on the hill side and goes down until it makes quite a hole in the ground, being something over 200 feet deep. Here is where I had my first view of the material from which cement is manufactured in the Lehigh district. The material consists of what is called natural cement rock, to which is added limestone or clay as occasion requires, to get the desired composition. This cement rock is quite widely distributed over the Lehigh territory and all the works I visited are using practically the same material. Some of them find the limestone on practically the same ground as the natural or hydraulic cement rock, while others have to go outside and buy their limestone, but they never have to go far. Quite frequently they find in this natural cement rock the exact composition required, as I was informed was the case in the quarry of the Bonneville Cement Co. From what I could gather in regard to the run of the quarry, near the top the natural cement stone is too low in lime and requires an addition of limestone. Deeper down it gets to just the right composition for Portland cement, and, deeper yet, it is sometimes found to run so high in lime that a little clay or shale is necessary to reduce the percentage.

WHERE SAYLOR'S FIRST EFFORTS WERE MADE.

If you will take a reliable map of Pennsylvania, not a railway map, and look it up, you will find that Northampton and Siegfried are on the East side of the Lehigh River above Allentown. On the West side of the river in the same locality may be found the towns of Coplay, Egypt and Cementon. Scattered around between these three towns the cement plants are so thick that it becomes rather confusing to a stranger. Going up from Allentown the first plant reached is that of the Coplay Cement Co., at Coplay, Pa., of which Charles Saeger is manager. In fact, they have two or three plants here, the old original Coplay plant and a new and strictly modern plant up the valley a little way. I reached the office too early for Mr. Saeger, and consequently failed to see him, but a walk through the grounds gave me the impression that there are two plants at the old stand. There is on one side the old upright kilns marking what was evidently the plant where D. O. Saylor labored so well and faithfully to manufacture Portland cement. At the new plant I noticed they were erecting an additional building.

Going up the valley past the new plant of the Coplay Cement Co. I came in sight of cement plants in both directions which was somewhat puzzling for a while, but after visiting and investigating I found that the one up the valley to the left was Mill B of the Lehigh Portland Cement Co., and up to the right was the works of the



VIEW OF ONE OF THE VULCANITE CEMENT MILLS, SHOWING QUARRY AND CABLEWAY.

American Cement Co., including a new mill recently erected and one being erected. I was also informed that just a little further was the A and D mills of the Lehigh Co. at Ormrod.

Taking the trolley on toward Egypt I jumped off at the turn and walked across the hill toward the river where I located the plant of the Whitehall Portland Cement Co., at Cementon. Here I found the same busy hum that characterized the other cement works of the country at this time, and was informed that they had a demand for all the cement that could be produced. The capacity of the plant is about 4,000 barrels a day. They have their general offices in the Reading Building at Philadelphia, Pa. On looking around and taking my bearings I found that this call brought me back practically to where I had started from, as the town of Siegfried is just across the river from Cementon, and I had covered what is known as the Western part of the Lehigh district.

A JAPANESE VISITOR.

On coming back to Allentown after a day among the mills I found that this cement country has recently been visited by a Japanese engineer who was desirous of studying American methods of manufacturing Portland cement. His name is T. Sakauchi, and he is engineer of the Asano Cement Works, of Tokio, Japan. He visited a number of plants in this region and made a thorough study of the system of manufacture and will likely, if he has not already, place orders for American machinery for manufacturing cement.

Mr. Arsano, the proprietor of the cement works, represented by this Japanese engineer, is also owner of a line of steam ships operating between San Francisco and Tokio.

HEARD AND SEEN IN ALLENTOWN.

Among other news items picked up in Allentown, I learned that Mr. T. J. Ochs, contractor, has been granted a patent on a plaster composition which is said to consist of hydraulic cement, silicate of aluminum and powdered carbonate of lime. The silicate of aluminum and the carbonate of lime are used in the raw state and the mixture is saturated with water. I did not learn just what the proportions were.

There was also a report current that the Lion Portland Cement Co. had commenced the erection of a cement plant near Nazareth, Pa., to have a capacity of 1,500 barrels daily. Among those interested in this enterprise are: Dr. A. S. Rabonold, Frank H. Schmeier and Morris J. Stephen.

Among the machinery men of the Lehigh district, who help to fit up cement plants is W. F. Mosser & Son, of Allentown, Pa.; and Mr. John Greenall, of this firm, is one of the men who are long on cement knowledge. Mr. Greenall came to this country from England in the early days of cement development, and has kept in touch with the cement industry of the country from that time on. This company is now shipping cement machinery to California, and also has an order for Australia.

The Bethlehem (Pa.) Foundry and Machine Works, is another concern that makes more or less cement machinery. The manager of the company was away when I called, and I could not say just what they are specially busy on just now, but I learned that they were pretty busy.

Mill D of the Lehigh Portland Cement Co., which is located at Ormrod, Pa., began operations the first of August.

I was informed that Wm. Coyle, Harry G. Seip, Frank Reeder, Jr., Wm. White, Geo. Coffin and others of Easton, Pa., intend to incorporate a cement company, known as the Superior Portland Cement Co.

IN THE SLATE BELT.

After mapping out my route with the assistance of Harry Grammes and his local traveling man, and other co-workers, I concluded to make the Western division of the slate belt, and that meant a trip to Slatington. The first man I met in the slate industry on arriving at Slatington was O. A. Miller, wholesale dealer in roofing slate, blackboards and structural slate, who has an office at Slatington and also another, which is his home office, at No. 2001 N. Twenty-second Street, Philadelphia, Pa., and I consider this was a streak of good luck on my part, for Mr. Miller kindly offered to take me in his buggy out among the slate quarries—and, it goes without saying, that I



SLATE QUARRY VIEW, SHOWING CABLEWAYS.

accepted. During the ride out to the quarries I learned that Mr. Miller is a native of this part of Pennsylvania, notwithstanding the fact that he makes his home in Philadelphia. He was at one time in the wholesale commission business in Philadelphia, but his health failed him and he found it necessary to get out among the mountains a little, so as he had some interests in slate quarrying lands he concluded to go into the slate business.

I learned, also, when we arrived at the quarries, and he began to explain the slate formation, that he had made quite a study of the subject. This slate formation may not be a geological curiosity but it is certainly a curiosity to the average newspaper man, and the curious features are not lessened any when the Slatington region is studied in comparison with the Bangor quarries. This slate vein does not lay level, nor is it of uniform depth, but a study of the formation gives one the idea of immense waves. It is frequently described

by writers as resembling an inverted letter S in its formation. This does not clearly explain it, but if you can imagine the outlines of hills and valleys designed originally to measure something like 1,000 feet from the bottom of the valley to the crest of the hill, you may get a general idea of the formation, if you will consider in this connection, too, that these hills do not run to a natural top, but the formation runs out at the top of the ground while the line of formation runs up in the air, and in the valleys are subsidiary leads which might suggest to one that the top of the hill had been cut off and turned over into the valley. We passed a new school slate factory on the way out which appeared to be nearing completion that Mr. Miller said belonged to the Hyde Slate Co., Bangor. Some one else told me, however, that it was the property of the National School Slate Co., and I called at the office of this company to see Mr. E. L. Kraus, but he was out and the office closed, so I have not been able to decide just who the new plant belongs to.

AMONG THE SLATE QUARRIES.

In making the rounds of the quarries it was evident, without asking, that this had been a good season in the slate business, for there was no stock on hand at any of the quarries, and during most years you can find yards full of roofing slate all around there.

L. Mack & Co., who were found at the quarries at Slatonsdale, stated that their only worry was to get out slate fast enough to keep their customers in a good humor. Their specialty is Blue Mountain roofing slate, blackboards and mantel stuff. Right next to their quarries the Bittner Slate Co. has opened up new quarries, and were just beginning to get out roofing slate in a nice shape.

STUDYING A SLATE SAWMILL.

At the quarries of the Blue Mountain Slate Co. I met Mr. Owens and I took a stroll through his slate sawmill while he and Mr. Miller talked business. The sawmill was quite a study to me for I was accustomed to seeing saws work in lumber, where they go through it at railroad speed, and they do not do anything like this in the slate business. I learned, after asking a number of impudent questions of the sawyer in charge, that the saw goes through a chunk of slate at the rate of about six inches a minute. The saws that are used here are heavy circular saws about 3/4 inches thick and about 24 to 30 inches in diameter, and have teeth on them shaped pretty much like cross-cut saws for lumber, only they are swaged and dressed square like a rip saw.

THE WASTE IN SLATE WORKING.

Another man I met out among the quarries was a Mr. Griffith, of Griffith Bros., who are opening up some new quarries. They are not new men in the slate business by any means, for the Mr. Griffith I met is one of the experienced heads who has made a study of slate, having studied the slate question in connection with the quarrying business for some time. He inquired of Mr. Miller and I if either of us could tell him what the item of waste represented in quarrying and working slate. Mr. Miller states he thought just about seven-eighths, but Mr. Griffith contended that nine-tenths would come nearer the correct thing the laconic statement, "At quarries."

THE SLATE BUSINESS IS GOOD.

On reaching town again I called at the office of the Slatington-Bangor Slate Syndicate, and here Mr. James L. Foote informed me that business was lively in roofing slate, and that the indications were that the demand would continue to be good for another year.

I called at the office of the Providence Slate Co., of which A. S. Haines is manager, brought to practically the representation of Mr. Foote's statement in regard to business. In fact, before I had made half the rounds, it was no longer a question of whether a man was busy, but how busy, and how long it was expected to last.

I next called at the office of the Columbia Slate Co. of which Mr. A. E. Steckel is proprietor, but Mr. Steckel was absent.

Another man who was absent, was Henry Seiger, of the Eureka Slate Manufacturing Co., and there was a notice stuck in the door containing the laconic statement, "Quarries."

A TALK ABOUT BLACKBOARDS

At the Slatington office of J. K. Hower, whose home office is Danielsville, Pa., I found Major R. J. Kichline, and it made me happy, too, because the major has not only traveled South long enough to get his title but that or something else has given him that whole-soul, cheerful quality



A TYPICAL PENNSYLVANIA ROOFING SLATE PLANT.

that makes a man feel at home with him in two minutes. One of their specialties is blackboard slate, and they not only have some fine samples on tap in the office, but the major is also loaded with good, logical slate information and can tell you all about blackboard slate from its introduction a quarter of a century ago to the possible demand for next year. He says that the demand is fully as flattering for this class of material as it is for roofing slate.

I also called at the office of the Slatington Slate Co., of which that pioneer slate man, Henry Kuntz, is president, and though I did not see Mr. Kuntz personally I enjoyed a discussion of slate matters with Mr. Bowman. Of course it was the same story, the greatest worry was to get out slate enough to fill orders. In fact, this story is getting so monotonous that I get tired of hearing it repeated, and I guess the readers will get tired of hearing me tell it over and over. Now, there are other slate men in this locality, but I did not get to see them. I did not even get to see Mr. Miller after promising him I would come down to the office. I had just called to mind that there is a slate company with a name suggestive of boyhood days in the hazelwood patch down in the hollow, the Hazel Dell Slate Co., and I had been advised to call and see Mr. Roper, of this company, as he was one of the best-posted men on slate history of the district, and I started in quest of him when I met a trolley car headed toward Allentown, and knowing that was my last chance to get back in time for supper, I pulled out, feeling somewhat ashamed that I did not get down to thank Mr. Miller again for his kindness for taking me over the slate region.

AROUND HISTORIC NAZARETH.

Allentown and the surrounding country is not only connected by railways, but there is about two hundred miles of trolley lines across the country between the towns. In fact, it looks like a man can get anywhere up in that country on the trolley, provided he is not in too much of a hurry. And they hurry a little, too, sometimes, for while the cars seem to creep up the mountain, when they get to the top of the hill they simply turn loose and fall down.

I made use of one of these trolley lines to visit in what is called the Eastern district of the Lehigh cement and slate region, in going to Nazareth. In this historical district there are four cement plants in operation, and if the Lion Portland Cement Co. erects a plant, there will be five. Those operating at Nazareth at present are the Decker Portland Cement Co., the Nazareth Cement Co., and the Phoenix Cement Co., while a short distance away, at the town of Stockerton, is the plant of the Northampton Cement Co., which properly belongs to this group. I met Prof. Wm. B. Newberry, of the Decker Portland Cement Co., at dinner at the Nazareth inn. He says they have just been putting in some new kilns, and increasing the capacity of the plant from 700 to 900 barrels a day, and, like all other cement people, they are very busy.

After dinner, I walked out to the plant of the Phoenix Cement Co., but President Turner was out among the works somewhere, and I did not get to meet him, even after waiting for about half an hour, while the office boy chased around looking for him.

A man feels somewhat disappointed after going a thousand miles and making calls among the cement plants, and continually missing the managers, and I felt some of this when I walked across from the Phoenix to the Nazareth Cement Co. and found that the general manager, P. H. Hampson, of this plant, was away in New York. This plant is operating eight kilns and has a capacity of about 1,500 barrels a day. Their output is handled by the Chas. Warner Co., with main offices at Wilmington, Del.

HEADQUARTERS FOR CABLEWAYS.

After leaving the Nazareth plant, by doing a little sprinting and bribing the motorman to stop at the inn while I gathered in my grips, I made quick trolley connection for Bangor. On arriving at Bangor I made a bee-line for the office of the S. Flory Manufacturing Co., who are manufacturers of all kinds of hoisting and conveying machinery, and also make a specialty of machinery for manufacturing slate. I thought this would be a good place for getting information, and I was not mistaken, for I found that they were loaded with information about slate and cement mills, and they also supplied me with pictures of equipments put in by them, especially cableways for conveying material from the quarry to the

plant. Practically all the slate quarries of Bangor are equipped with their cableways, and many of the cement plants in the Lehigh region. In fact, cableways seem to be the only manner of handling slate from the quarries to the mills and working sheds in the Lehigh district and, naturally, the Flory Manufacturing Co. being on the ground, they can and do furnish practically all of this material.

SOME BRIGHT LIGHTS OF BANGOR.

I also had an interesting talk with R. P. Schhoonover, of R. P. Schhoonover & Co., who make a specialty of the genuine Bangor and Peach Valley roofing slate, and the Bangor slate blackboards. It was the same old story of the demand exceeding the supply, and a struggle to keep within hailing distance of the end orders.

After supper I went over to the new building of Bowers Bros., who have recently erected one of the finest buildings in that part of the country out of yellow brick and Connecticut brownstone. Mr. William H. Bower is the slate man of this firm, his brother, Herman, being a butcher. I found Mr. William H. in an elegant office up in the new building, and he took me for a walk out among the quarries before it was too dark to see how deep they were. The slate quarries here I found different from those at Slatington, in that the layers were piled flat on top of each other, having a slight uniform dip, and the veins did not lap or bend over like those in the Slatington district. To get at the slate there is usually a top stripping of from a few feet to twenty feet, and then they simply quarry or mine down into the ground until the bottom of the vein is reached. Mr. Bowers has spent practically all his life in the slate quarries, and says that they are usually in shape to produce as much, if not more, than any concern there, but they are peculiarly unfortunate right at this time, in that they are opening up and stripping a new quarry, and consequently they have not been able to furnish any slate for some time; and this right at a time when the demand is strong and prices good. They are beginning to get out slate now, however, and will make things hum pretty soon. I admire Mr. Bowers' ability as a slate quarryman, and would be willing to bet on his judgment right along; but I would actually rather have that new building of his than any of the slate quarries in the country, for it is a "crackerjack."

Another man I met was Mr. Miller, who looks after the quarrying and manufacturing end of a number of companies which are producers here for the American Slate Co. and the Pennsylvania Structural Slate Co., with main offices in the Drake Building, Easton, Pa. The quarries looked after by Mr. Miller are scattered about the country, some being at Pen Argyl, some at Bangor and others East of Bangor.

There are quite a number of other slate companies at this place, and I hope to be able to see more of them next time; but the time was too short to make the rounds on this trip.

A STRUCTURAL SLATE SPECIALIST.

At Easton, Pa., I spent a pleasant hour with Mr. M. W. Catchings, who is treasurer of the Genuine Bangor Slate Co., the American Slate Co., and the Pennsylvania Structural Slate Co., with offices in the Drake Building. The Pennsylvania Structural Slate Co. makes a specialty of structural slate, and I was surprised to note the many different uses to which slate can be put to advantage in building a modern house. Mr. Catchings, who, by the way, is a native of Mississippi and has retained that warm spirit of Southern hospitality, says that he is striving particularly to push the sale of structural slate in the South, where it is not used as much as it would be, if it were better known. I have not room to do justice at present to the many advantages he pointed out to me of slate in structural work, and I will save the subject for another time. The several companies of which Mr. Catchings is treasurer, represent, either as selling agents or as owners, the bulk of the slate output of the Bangor region, which includes a string of quarries and mills as long as the moral law.

CHEERFUL CEMENT NEWS.

Across the river from Easton and down in New Jersey, is located the Alpha Slate Co., at Alpha, N. J., and further down is the Vulcanite Portland Cement Co., at Vulcanite. I was not able to make train connections and visit the mills, but in coming back to Philadelphia, where the main office of the Vulcanite Portland Cement Co. is located in the Real Estate Trust Building, I met Mr. B. F. Stradley, who is general sales agent and manager

of the sales department of the Vulcanite Portland Cement Co. I found Mr. Stradley to be one of the most optimistic men in the cement industry. He says that early last April he became convinced from certain sources of information that there would be a shortage of 5,000,000 barrels in the cement supply for the past year, and that he had recently been convinced from the same source that next year would show up a shortage of 10,000,000 barrels. I confess that this was the most cheerful news I heard on the rounds, because I had somehow gotten a general impression that with the added equipment of this year, the demand might be caught up with next year, and things get a little dull, but he says not, and I am glad to hear it. This company has recently completed its third plant, and Mr. Stradley said he wished I would stop over and make a trip up to see it, because he thought it one of the finest cement plants that had ever been built. They now have three plants at Vulcanite, the oldest one making 800 barrels; the second one, 1,200 barrels; and the new one is equipped for making 2,000 barrels, which makes a total capacity of 4,000 barrels.

IN THE CITY OF BROTHERLY LOVE.

Bearing in mind Mr. Eckert's injunction to see Lesley for cement news, I made a call at the office of the American Cement Co., 22 South Fifteenth Street, Philadelphia, but Mr. Lesley, who is president of this company, was too busy to be seen, and when I went around next day, he had gone out of town. I was sorry, too, for I wanted to talk to him about their "Giant" cement, which I am informed has been given quite a complimentary testimonial by a power company at Niagara Falls, that used it in constructing a tunnel, and then there were other things I wanted to see him about, too.

I enjoyed a pleasant hour with Mr. A. Daboll, of the Philadelphia branch of the Chas. Warner Co., with offices in the Land Title Building. Mr. Daboll says that the selling department has practically nothing to do these days, but bend their efforts toward trying to get shipments along fast enough to keep the customers in a good humor. This company handles the output of the Nazareth Portland Cement Co., at Nazareth, Pa., and are also the manufacturers of the famous Cedar Hollow lime. They have just been refitting and enlarging their plant at Cedar Hollow. They are also making a specialty of concrete coffin vaults, which seem to have a promising future.

Mr. Hartranft, of the Hartranft Cement Co., Real Estate Trust Building, was also too busy to be seen when I called, and I was not able to make another trip around, but went looking for other men in the hope that I might find somebody that was not too busy. Still, it looks like everybody connected, either directly or indirectly, with the cement business, is too busy to turn around these days; and this includes machinery men. Among the busy ones in this I found the D'Olier Engineering Co., 119 South Eleventh Street, who are manufacturers of machinery and contractors for installing equipments.

Another busy firm was Edward Darby & Sons, 235 Arch Street, who handle wire cloth.

WITH THE U. S. GEOLOGICAL SURVEY.

At Washington, D. C., I made a call at the home of the United States Geological Survey, but did not meet Director Charles D. Walcott. His chief clerk informed me that Mr. Walcott was on a trip out West. I enjoyed a visit, however, with Dr. David T. Day, Chief of the Division of Mines and Mineral Resources, and happened on him just after he had been discussing a new and interesting subject in connection with quarries and mines. Dr. Chas. Wardell Stiles, of the Marine Hospital Service, Washington, D. C., had just been telling Dr. Day of some discoveries of disease germs peculiar to mines and quarries. One of the diseases spoken of was called "tunnel disease," which is somewhat like malaria fever, but, on investigation, Dr. Stiles found that there was a microbe peculiar to tunnels, and particularly prevalent in the Southern quarries, which caused this disease. Dr. Day was very much interested in the subject, and we will likely hear something more in the near future on this subject from both Dr. Day and Dr. Stiles.

Another subject I found Dr. Day not only warmly interested in, but enthusiastic over, is the development of our native marble resources. He says there is absolutely no question but that from the resources of America can be produced any and all kinds of marble, and when these resources are once developed, there will be absolutely no excuse for importing marble. J. C. T.

Stone.

The Wooster (Ohio) Sand and Stone Co. is equipping a sand plant at Kilbur, Ohio.

E. A. Harris, St. Elmo, Ill., has sold the St. Elmo Marble Works to E. E. Bradley, of Effingham.

The Flint Granite Co., Monson, Mass., has a contract for quite a lot of curbing for Chickopee.

The city of Freeport, Ill., has decided to install a crushing plant and crush stone for its own use.

Drenner & Marsh, stone masons of Grafton, W. Va., have recently opened up a couple of quarries.

J. H. Jacobs, of the Jacobs Red Stone Co., Ltd., Jacobville, Mich., has sold his interest in the business.

The Norcross Marble Co., Manchester, Vt., will erect a marble cutting shop in connection with the plant.

The Cape Ann Granite Co. with quarries at Gloucester, Mass., is reported as in the hands of a receiver.

M. Deeley & Sons, Lee Mass., have a contract to furnish marble for a terrace wall for R. W. Currey, of Newport.

The plant of the Capital Granite Co., Graniteville, Vt., was destroyed by fire early in August. Loss, \$7,000.00.

Morris Bros., whose marble works at Memphis, Tenn., were recently destroyed by fire are preparing to rebuild.

The Peoria (Ill.) Stone and Marble Co. has taken out a permit to erect an addition to their stone plant at that place.

Joseph Bourgeault has established a stone working plant in Duluth, Minn., under the name of the Duluth Cut Stone Co.

The Battlefield Granite Works, Fredericksburg, Va., is figuring on moving to a new location and operating on a larger scale.

The Rutland-Florence Marble Co. is building a new office building at Florence, Vt., and will move the offices from Rutland to that place.

It is reported that Ambrose Estes, of Yellville, Ark., is interested in some black marble property in that locality which promises to be valuable.

The Mathan County Granite Co., Wausau, Wis., recently voluntarily raised the wages of stone-cutters from \$3.00 to \$3.50 a day of eight hours.

The Webb Granite and Construction Co., Worcester, Mass., has secured the contract for granite for the wall of the Middle River from that city.

The Smith Granite Works, Westerly, R. I., are considering the erection of a large cutting shed at its plant. The contract has not been awarded as yet.

Henry K. Fox has been appointed receiver of the American Quarry and Construction Co., Philadelphia, Pa., by an agreement of counsel on both sides.

The J. B. Reinhalter Granite Co., Barre, Vt., has opened up some new cutting sheds which they have equipped with the latest improved machinery for working stone.

The Atlas Hydraulic Stone Co., Oklahoma City, Okla., has been incorporated by John T. Jones, Geo. W. Barrett, Jordon B. Thomas and Alexander D. Jones. Capital stock, \$10,000.00.

John Getze & Son, marble manufacturers of Londonville, Ohio, have recently installed additional machinery in their plant including pneumatic cutter and polishing machinery.

The plant of Morris Bros., Memphis, Tenn., one of the prominent stone and monument works of the South was almost destroyed by fire recently. Loss estimated from \$8,000.00 to \$10,000.00.

H. O. Spencer, Aurora, Ill., has bought an interest in the T. O. Fisk Marble Works at that place and will join forces with the other works by September 15.

The American Stone Paving and Construction Co. has been incorporated at Huron, Mich., with a capital stock of \$5,000,000.00. The incorporators are: Edward Wilde, J. King Parker and Philip Lawrence.

The Wayland Stone Co. has been incorporated at Terre Haute, Ind., with a capital stock of \$6,000.00. The officers are: Henry C. Steege, Edward E. Reiman and William T. McHugh.

O. M. Burous, a well-known marble man of Burlington, Ia., is preparing plans for an extensive enlargement and improvement in the plant and will extend his business to improve the general stone sawing in addition to the marble work.

The Atlas Hydraulic Stone Co. has been incorporated at Oklahoma City, Okla., with a capital stock of \$10,000.00. The officers are: J. T. Jones, president; A. D. Jones, secretary, and Geo. W. Barrett, 23 Choctaw Street, manager and engineer.

The Green Mountain Stone Marble Co. has been incorporated with principal offices at No. 51 Newark Street, Hoboken, N. J., with a capital stock of \$100,000.00, to quarry marble. The incorporators are: Monmouth S. Bucklee, James G. Burdy and Boyd S. Ely.

Marquis F. Dickinson and Robert F. Herrick have been appointed receivers by the Cape Ann Granite Co. The Maine corporations owning the granite quarries at Gloucester and Rockport, Me. The receivers are authorized to operate the plant and continue the business.

It is reported that Geologist H. E. Parmalee has discovered a fine ledge of Oolitic lime stone on land owned by Hon. A. Buttars near Charlevoix, Mich. The reports indicate that the find will be developed because it is on the lakeshore where transportation will be available.

The Keystone Construction Co. has been incorporated at Atlantic City, N. J., with a capital stock of \$7,650.00 to manufacture and lay cement, brick and asphalt pavements. The incorporators are: H. L. Barland, Braddock, Pa.; J. C. Wolfram and Henry Wolfram, Pittsburg, Pa.

The Montana Marble and Mining Co. has been incorporated at Spokane, Wash., with a capital stock of \$1,250,000.00. Among the incorporators are: W. Y. Pemberton, Butte, Mont.; A. N. Baldwin, C. E. Russell, W. E. Embrey, R. E. Vincent, George W. Belt and Francisco Bullivant, all of Spokane.

It is reported that an English syndicate has come into control of a valuable marble deposit in Southwestern Arizona, which was discovered by L. R. LeGier, of Phoenix, Ariz. Part of the marble property that is probably the most valuable is said to be in a ledge of black marble of the kind that usually comes from Egypt, Ireland and Belgium.

The United States Granite Construction Co. has been incorporated at New York with a capital stock of \$500,000.00, to operate marble and granite properties and to deal in building materials. Among the incorporators are: Edwin Boruch Ellis, Northfield, Vt.; Cyrus J. Hall, Hall Quarry, Me., and Christopher W. Hall, New York City.

Reports from Williamstown, Vt., state that the firm of Fontana Bros., granite manufacturers, has made an assignment to James K. Lande, of Williamstown. This concern moved from Barre, Vt., a little less than a year ago and have been doing quite a business, but poor collections have embarrassed them. It is hoped that arrangements will soon be made by which they may resume.

It is reported that Thomas Tracy will organize a company to develop stone and sand property near Sylvania, Ohio. The property under consideration was formerly held by Contractor J. N. Bick, Toledo,

Ohio, but has been transferred to the Ohio Savings Bank and Trust Co., which will act as trustee, and they propose to form a trust with a capital stock of at least \$300,000.00.

The Tennessee Variegated Marble Co., Columbus, Ohio, has been organized and the following officers were elected: C. M. Henley, president; W. B. Gamble, vice president; J. R. Booth, secretary-treasurer. This company is incorporated under the laws of New Jersey and has a capital stock of \$600,000.00. It is said to own and control large and valuable marble quarries near Knoxville, Tenn. Pink, gray and variegated marbles are found on their land.

It is said that what promises to be an important industry in sight of New York is the limestone quarries of S. O. Miller near Thomasville, Pa. As a result of the opinions of experts, who analyzed the rock and pronounce it among the finest in Pennsylvania, Mr. Miller will extend operations in order to make his place one of the leading industries in that city. This stone, it is said, has been attracting the attention of stone men for a year or two, and they have sought to get control of the quarries, because of its quality as fluxing material. Heretofore, however, the product of this limestone quarry has been used largely as lime for whitening the interior of buildings, but future developments will likely be in the line of crushing stone for fluxing.

The Exports and Imports.

In comparing the exports and imports in rock and clay products for the year ending June 30, 1902, it will be observed that the only items of importance in the light of imports exceeding exports are cement and salt, nor is there anything to have the blues about even in this.

The total importation of cement did not amount to one and a half million dollars, and shows a steady decline. In 1900 it was \$3,270,916.00, declining in 1901 to \$2,198,916.00, and this year to less than a million and a half dollars. The principal countries from which our imported cement comes are Germany and Belgium. Germany leads with a total for the past year for cement of \$834,555.00, and Belgium furnished us to the value of \$521,837.00.

The value of salt imported shows an increase in 1902 over that of 1901 of a few thousand dollars, and also over that of 1900, the total value of salt imported in 1900 being \$625,863.00. The export business in salt, however, is growing, and the chances are that the returns two years from now will show the exports exceeding the imports.

The figures representing marble and stone require some explanation, or else they may give a false idea of the condition. In the export, the figures include roofing slate, which is the biggest item exported under the head of stone, being larger, in fact, than all other items put together. The total value of roofing slate exported for the year, ending June 30, 1902, was \$945,352.00, which is an increase over the figures for 1901, but did not reach the figures of 1900, for in that year there was exported roofing slate to the value of \$950,543.00.

Germany is our best customer for fertilizers, that country buying in the past year fertilizers amounting to \$2,308,656.00, which was just a little more than all the rest of Europe bought. Business in this line seems to have fallen off in 1901, and is just now getting back to the proportions of 1900.

Germany furnishes most of our earthen, stone and chinaware, the figures from that country alone for the year showing a value of \$3,651,264.00, and the United Kingdom comes second, with a total value of \$2,928,341.00; and France, which we might at first think would supply the greatest quantity, shows up with a total of \$1,618,657.00.

Imports and Exports for the Year ending June 30, 1902.

MATERIAL	IMPORTS		EXPORTS	
	QUANTITIES	VALUES	QUANTITIES	VALUES
Asphaltum, tons.....	119,625	428,977		
Bricks, building.....			5,945	51,350
Bricks, fire.....				449,151
Cement.....	423,844,160	1,478,452	392,462	651,526
Earthen, Stone & Chinaware		9,680,156		600,798
Fertilizers, tons.....		2,426,758	763,700	6,256,035
Marble & Stone.....		1,641,388		1,761,696
Oils.....		9,300,198	942,363,160	65,342,826
Salt, bbls.....	381,874,845	688,369	17,322,518	83,264

Marble

The American Marble Industry.

We have been cogitating more or less on the subject of American marble, and wondering why there has not been more said about it. In fact, the impression has grown on us that this article has not been receiving the attention that is due it, especially in structural work, and now our ideas on the subject have been virtually confirmed by no less a personage than Dr. David T. Day, Chief of the Division of Mining and Mineral Resources of the United States Geological Survey. A representative of this paper, during a recent trip to Washington, put the following question to Mr. Lay:

"What do you think of our native marble resources; that is, is it not possible to supply more of the demand for marble from native stone than is being done?" In reply to this question, he stated that there was absolutely no question but what any variety, quality or quantity of marble could be supplied from our native resources, and the only thing necessary to demonstrate this fact is the matter of education among marble users, and the development of the marble resources of the country. He says there is no color, quality or shape of imported marble ever specified by architects but could be furnished from American resources. Further, he does not think there is any excuse for an architect supplying foreign marble after he has once been shown what can be produced at home. It is but natural for an architect, who has been trained abroad, or at least along ideas which originate abroad, especially where they relate to the use of marble in structural work, to supply a foreign marble that has been impressed on his mind as the proper article by his teachers and advisers, both in person and in books.

The first duty, therefore, of those interested in the development of American marble resources is to inaugurate a campaign of education along the line of what can be supplied, and that is the point we are driving at, and it seems to us there has not been enough effort along this line, and we are here to help push things along a little; and to that end we ask the co-operation of those who own or are interested in developing native marble quarries.

As a starter, we would suggest that samples of stone be furnished us, that is, polished pieces, that would give us an idea of the color and polishing qualities of the stone; and if the owners of quarries will supply us with these samples, we will see if we can not start a ball rolling that will help things along. We have the marble—the least question of doubt has been removed by this interview with Dr. Day. We have the men and machinery to work it with, and there is no excuse for not pushing it along.

In discussing the matter, Dr. Day cited us to the report just issued, covering the stone industry for 1901, which gives some idea of the abundance of marble and its wide distribution. From reading this report one becomes impressed with the idea that there is practically no limit to the marble resources of America; also that the industry has only just begun to develop.

Even far-away Alaska reports the production of marble, the companies interested there being the Alaska Marble Co., at Shakan, and the Klawak Marble Co., of Alaska, with offices at Seattle, Wash., and quarries on the Prince of Wales Island.

Georgia produced nearly \$1,000,000.00 worth of marble in 1901, and would have shown a larger increase had it not been for some difficulty in obtaining freight rates of an encouraging character. This State is already second in the quantity of production.

Maryland shows a decrease in the output of marble of about \$2,000.00 for 1901, as compared with 1900, the total production for 1901, being \$68,100.00; but 1902, will undoubtedly show up somewhat better.

Massachusetts also shows a decrease in structural marble, and an increase in marble for monumental purposes. It is in order to remark, in this connection,

that in a study of the statistics of marble produced and its uses, we find a large quantity of native marble goes into cemetery work, while there is not as much goes into buildings as there should.

New Mexico reports a larger production than ever before in 1901, its value being \$10,600.00—more than twice what it was the previous year—showing that while the industry is only in its infancy, it is growing rapidly. The onyx marble found there is said to be the same as the famous Mexican onyx.

In New York we note also that the amount of marble used for cemetery work increased, while that sold in the rough decreased. Interior and ornamental work also showed an increase, so that there is really not much room for complaint as to the structural end of the business.

Pennsylvania produced marble in 1901, to the value of \$157,547.00, an increase over previous years of over \$6,000.00, which was chiefly in marble used for monumental work.

Tennessee, which ranks third in marble production, turned out marble to the value of \$494,637.00, an increase of \$70,583.00 over previous years. In this State, the value of rough stone and marble used for interior work increased, while the value of building and cemetery marble decreased slightly.

Vermont rounded out the year 1901, with a production of \$2,753,583.00, being an increase of over a quarter of a million over previous years. This State produced practically 55 per cent. of the marble of the country during the year. The chief trade change noted in Vermont for the year was the formation of the Rutland-Florence Marble Co., by the combining of several quarrying interests, including the True Blue Marble Co. and the Beldens Falls Marble Co.

Washington reported a number of new industries for the year; in fact, more than any other State. The first company to get started was the United States Marble Co., Spokane, of which there was a description in Rock Products last month.

The name "onyx," according to this report, as applied to marble, is not taken as meaning precious onyx, that variety of quartz closely allied to agate. The name of onyx simply has been given to that variety of travertine, which from its manner of deposition contains bands and way lines similar to the banded structure of the precious onyx. The stalactite and stalagmite formations so similar in caves are also travertines, and from their banded appearance and similarity to the onyx marble are called "cave onyxes." These differ from the onyx marbles in the fact that the onyx marble and the cave onyxes are generally opaque. While the onyx marble is generally more brilliantly colored and beautiful than the cave onyxes, and while the onyx marble is especially noted for its uniformity of structure and homogeneous texture, the cave onyxes often show a fibrous structure and are made up of concretionary layers which scale off. The coloring in each is due to the presence or absence of impurities in the water, such as oxides of iron, aluminum, manganese, etc. The cave onyxes generally contain fewer impurities than the onyx marbles. It is of interest to note in connection with onyx marbles and cave onyxes that the best of the onyx marble is found in regions either formerly subjected to volcanic action, or closely connected with hot springs, or deposits associated with hot springs, as those in California, Arizona, Utah, New Mexico and lower California.

The chief beauty, and therefore value, of the onyx marble consists in the nearly perfect uniformity of texture and structure, the translucency which gives the appearance of depth, and the delicacy of the coloring. The various colors of the stone show translucent whites, delicate greens shading to very dark greens, delicate pinks, light browns and chocolates, amber, ocher, yellow, brilliant red, orange, lemon, and often veining of other colors. The coloring is in some cases not uniform throughout, and generally has a wavy effect with sometimes alternating bands of light and dark shades. The white onyx marbles are sometimes called and sold under the name of alabaster. The true alabaster is, however, a variety of gypsum, and softer and less durable than the onyx marble.

The value of a deposit of onyx depends on the size and thickness of the stone that can be obtained from it, as well as the coloring and texture of the stone. It is generally cut in slabs, but is also sold in rough blocks, suitable for carving or being made into columns.

The stone takes a high polish and is easily worked. The price commanded in the market is determined by the beauty of the stone, the size of the block or slab, the amount of work necessary

to put it in shape, the difficulty of quarrying or obtaining it, and the difficulty of transportation. The cave onyxes seldom yield blocks or slabs sufficiently large and uniform in texture to make them very valuable, except for small ornaments and interior work, where large pieces are not required.

The most valuable quarries of onyx in the world are in the Republic of Mexico, from which large and beautiful slabs are obtained, and the small pieces are carved, polished, and made into ornamental objects and sold in various forms as souvenirs.

The principal deposits are near Vera Cruz and the city of Mexico, at Tecali, near the city of Puebla, and in the district of Tehuacan.

Lower California has large deposits of this onyx. Egypt, Algiers, Italy, France and Germany and the caves of Gibraltar also have more or less valuable deposits of this stone, the Egyptian and Algerian product being generally known as alabaster. The onyx of the United States, except that from California and Arizona, is not considered quite as good as the Mexican onyx in color or in fineness of texture. It is more expensive from the fact that labor is cheaper in Mexico, and that in Mexico the quarries have been opened long enough to have transportation facilities. In most cases of the United States, the onyx is found in territory which is but little developed, and in which both labor and transportation are high, and the deposits are owned by firms or individuals who have not the means necessary to develop them.

Arizona, New Mexico, California, Colorado, Idaho, Kentucky, Missouri, South Dakota, Utah, Virginia, Washington, Texas and Arkansas have reported deposits of onyx and "cave onyxes" are found in nearly all of the limestone-producing States.

California and Arizona were two first States to report any production of onyx, but at the present time no material except for samples is being taken out of these States. In Arizona deposits are owned and held either for development work or quarrying by the Arizona Onyx Co., 30 Broad Street, New York City, with quarries near Mayer and Big Bug. Mr. R. L. Ligier, Phoenix, Ariz., has undeveloped quarries in Maricopa County, near Cave Creek, but none of these are in operation now. The colors in the Arizona quarries vary considerably, and the stone here is exceptionally beautiful.

One of the principal deposits in California is at Musick, and is owned by Mr. F. A. Kessler, of San Francisco. It also occurs at Suisun, Sulphur Creek, and in San Bernardino, Siskiyou, Los Angeles, Kern, Placer and Tehama counties. The color of the stone at Musick is a creamy white with bands or clouds of red, chocolate brown, smoky black, etc. The Suisun stone is a dark amber, and is the deposit in Colusa County. The deposit in Siskiyou County is green.

Colorado has deposits of marble onyx owned by the Denver Onyx and Marble Co., of Denver, and the Colorado Onyx Co., at Steamboat Springs.

Kentucky has deposits of cave onyx, and at Cave City, the Kentucky Onyx Co. and Messrs. George T. Parker & Son have deposits, which while they have not been operated to any extent, will be opened if the demand calls for it.

New Mexico in 1900, produced onyx valued at \$10,600.00, and this is the only State whose production was notable. The chief deposits are near Alamogordo, Silver City, and near White Oaks. The firms having quarries at these places are the Caballero Onyx Mining Co., of El Paso, Texas; Frank Falconer & Co., Alamogordo; John Hazzard, Alamogordo, and the Silver City Marble and Onyx Co., Silver City. The deposit of the Caballero Co. is eight miles Southeast of Alamogordo, on Sacramento Mountain, and is found in bowlders. It is of a chocolate color and black. The first shipment of this was sent to Hamburg, Germany. Mr. John F. Mains, of White Oaks, New Mexico, has also an undeveloped deposit.

Mr. W. S. Johns, of Cincinnati, Ohio, is interested in the development of a deposit of onyx found along the Ohio River, about three miles below Manchester, Ohio. This is a creamy white stone, clouded with light and dark brown.

Near Lehi City, Utah, and near Ogden, Utah, deposits of onyx are reported by the Green Onyx Co., of Lehi City, and the Ogden Onyx Co., of Ogden, but operations have not been extensive. Also Mr. Joseph E. Ray, of Fillmore, owns a deposit of black and gray onyx, which is not at present worked.

Virginia has deposits of cave onyx, as well as the onyx marbles, and while nothing is being done there, the deposits are represented by the Virginia Onyx Co., Rapps Mill and the Old Dominion and Black Marble Co., Saltpetre Cave, with offices at Zanesville, Ohio.

Salt.

The Past Year in Salt.

The production of salt in the United States during 1900 and 1901 was the largest for any two individual years yet recorded, says Dr. Joseph Struthers in "Mineral Resources of the United States, 1901," now in press, United States Geological Survey.

The total production in 1901 was 20,566,661 barrels of 280 pounds each, a decrease of 302,681 barrels, or 1.5 per cent. from the production of 20,869,342 barrels for 1900. The value of the salt produced in 1901 was \$6,617,449.00, a decrease of \$327,154.00 from the value of \$6,944,603.00 in 1900. The corresponding figures for 1899 were 19,708,614 barrels, valued at \$6,867,467.00.

Under the production of salt Dr. Struthers includes salt in brine, which is used in very large quantities for the manufacture of soda ash, sodium bicarbonate, caustic soda, and other sodium salts. During 1901 the United States manufactured 529,104 short tons of sodium salts of all varieties, and the quantity of salt, chiefly in the form of brine, required to make this product was in excess of 1,000,000 short tons, equivalent to more than 4,000,000 barrels.

Two Decades of Salt Progress.

The rate of progress in the salt industry since 1880, when the production was 5,961,060 barrels, to 1901, with its production of 20,566,661 barrels, is very great, the increase being about 400 per cent. During the last eighteen years, with the exception of 1889 and 1901, the yearly production has regularly increased; and yet, notwithstanding this rapid increase, possibly because of it, the business of the production of salt has not been a lucrative one. This condition of the industry was due in a great many cases to over production and keen competition for trade. As a result, combinations have been effected among the majority of producers in New York, Ohio, Michigan, Kansas, Utah and California, which are among the most important of the salt-producing States.

Michigan and New York Lead in Production.

Previous to 1893 Michigan was the chief salt-producing State, but in that year New York assumed the lead and maintained the foremost position until 1901, when Michigan again resumed the supremacy with a production of 7,729,641 barrels as compared with the production of 7,286,320 barrels in New York. The production of salt in Michigan in 1901 was increased by 519,020 barrels over that of the preceding year, while the output from New York was diminished by 610,751 barrels. Of the other two leading States, Kansas produced 2,087,791 barrels, and Ohio 1,153,535 barrels. These four States contributed 88.8 per cent. of the total quantity of salt produced in the United States during the year, the percentages of production being, respectively, Michigan 37.6 per cent., New York 35.4 per cent., Kansas 10.2 per cent., and Ohio 5.6 per cent. Of the total consumption of salt in the United States, the quantity of salt of domestic production used increased from 63.5 per cent. in 1880 to 93.45 per cent. in 1901, while the consumption of salt imported into the United States decreased from 36.5 per cent. of the total in 1880 to 6.55 per cent. in 1901. The actual consumption in 1901 was 21,940,235 barrels, or more than 2.3 times that of 1880. In 1880 the imports of salt amounted to 3,427,639 barrels; in 1901 the imports were 1,440,950 barrels. The chief sources of the importation of salt into the United States are: The United Kingdom, the West Indian Islands (chiefly British) and Italy. About 40 per cent. of our imports are drawn from the United Kingdom.

San Francisco Does the Exporting.

The principal exports of salt are from the port of San Francisco, and they go to the Central American States, Mexico, the Hawaiian Islands, Japan and Asiatic Russia. About 25 per cent. of the exports are shipped across the Great Lakes to the Dominion of Canada. The total exports for the fiscal year ended June 30, 1901, were 14,183,167 pounds.

The statistics for the year 1900 are the latest available for the world's production of salt. Previous statistics show that the United States, which, since 1892, has held second place among the countries of the world, became the leader in 1897, ranking Great Britain by about 5 per cent. This advantage was increased in 1898 by a gain in the production of the United States and a decrease in the output of Great Britain, and was further augmented in 1899 by an increase in production by the United States, nearly eight times as large as that of Great Britain for that year. In 1900 the United States reported an increase in production of approximately 160,000 short tons, whereas the output of Great Britain was 60,000 short tons less than in 1899.

Uncle Sam Leads the World.

It thus appears that the United States has not only maintained, but has materially increased the lead over her principal rival in recent years. The total production of salt in the United States during 1900 was 40 per cent. greater than that of Great Britain in the same year. The total world's production of salt in 1900 was 12,551,043 short tons, valued at \$41,396,093.00, of which total the United States produced 2,921,708 short tons, a little over 23 per cent. of the total, and Great Britain produced 2,048,709 short tons, or 16.6 per cent. Austria-Hungary produced 572,642 short tons, somewhat less than 5 per cent. of the total world's output in 1900, but this product was valued at \$19,267,216.00, or nearly 47 per cent. of the total value of the world's salt product, nearly three times the value of the salt product of the United States, and more than six times the value of the salt product of Great Britain. This is due to the fact that the salt-producing industry of Austria-Hungary is a Government monopoly, and one of its principal sources of revenue. The first cost of salt to the consumer in the United States is a little over \$2.00 a ton; in Austria-Hungary it is nearly \$34.00 a ton. The mere fact that salt is so cheaply produced in Great Britain and the United States has increased its consumption and has had no little influence in the development of the packing industry, the manufacture of hydrochloric acid, chlorine, sodium salts, and also in the development of the chlorination process for the extraction of gold from its ores, and of the wet process for the treatment of silver ores.

The Fertilizer Market.

The phosphate market is generally quiet, though values are steady with holders firm in their views. There is nothing exciting in the phosphate producing district, and while productions, generally speaking, will exceed that of last year, there will not likely be an increased production compared with the increase in the consumption of fertilizers.

The consumption of the superphosphates and fertilizers has been increasing so rapidly in the United States that it will likely surprise some of the slow ones of the industry if they do not wake up. In fact, the phosphate people abroad are conceding that it will not be long before the American users of fertilizers will surpass Europe, where fertilizers first came into vogue extensively. Of fertilizer ingredients, the *Manufacturers' Record* gives the following as a record of current prices August 20:

Sulphate of ammonia (gas).....	\$2 90	@ 2 95
Nitrate of soda, spot Balto.....	2 05	@ 2 10
Blood.....	2 40	@
Azotine (beef).....	2 35	@ 2 40
Azotine (pork).....	2 35	@ 2 40
Tankage (concentrated).....	2 20½	@ 2 22½
Tankage (9 and 20).....	2 37½	@ 10 @ 2 40 & 10
Tankage (7 and 30).....	21 00	@ 21 50
Fish (dry).....	27 50	@ 30 00

The American Phosphate Co., Tallahassee, Fla., has been incorporated by J. H. Bell, E. S. McIntosh and others with a capital stock of \$25,000.00 to mine phosphate, etc.

A report comes from Gainesville, Fla., that William Bronson, superintendent of the Cummer Phosphate Co., Kokomo, near Newberry, Fla., has been assassinated by one of the negro employees of the plant.

After a season of inactivity the Sumner Phosphate Co., Gallatin, Tenn., has resumed operations. D. B. Anderson & Co., the contractors, have a force of over one hundred men and boys at work getting out the stone and preparing it for market. They are shipping out from six to eight cars of stone a week.

Fertilizers.

Phosphate Production.

The advance bulletin of the Mineral Resources of the United States for 1901, by the United States Geological Survey states that the production of phosphate rock for the year 1901 was 1,483,723 long tons, the value of which was \$5,316,403.00, as compared with 1,491,216 long tons for 1900, valued at \$5,359,248.00, which makes a decrease for the year, as compared with 1901, 7,493 tons in quantity, and \$42,845.00 in value.

The industry in Florida, says Dr. Joseph Struthers, who has the subject in charge, has been the chief producing State since 1894, continued to show an improvement, the total output and value for that State in 1901 being the largest yet recorded. The production of hard rock and land pebble was greater than in 1900, though the quantity of river pebble was appreciably less than the output of the previous year, and but slightly greater than one-half that of 1899. The increase in the production of hard rock and land pebble, however, more than offset the large decrease in the quantity of river pebble produced, so that the total production of phosphate rock in Florida during 1901 was greater than in 1900, being 751,996 long tons, valued at \$3,159,473.00, as compared with 706,243 long tons, valued at \$2,983,231.00, in 1900. Soft rock has not been produced in Florida since 1897, in which year a small output of 2,800 tons was reported.

In South Carolina there was a slight decrease in the output of land rock, which was nearly offset by the increased output of river rock, the total being 8,000 long tons less than in 1900; the respective outputs reported are 225,189 long tons of land rock in 1901, as compared with 266,168 long tons in 1900, and 95,992 long tons of river rock in 1901, as compared with 62,987 long tons in 1900.

The total output of phosphate rock in Tennessee decreased from 454,491 long tons in 1900, to 409,653 long tons in 1901, which is equivalent to nearly 10 per cent. decrease.

Pennsylvania contributed 893 long tons of phosphate rock during 1901, as compared with 900 long tons in 1900.

There was no reported production for Alabama, Arkansas, or North Carolina, although in the last-named State a few thousand tons of low-grade rock were mined, which was used for macadamizing streets in Wilmington.

The average price per long ton of Florida hard rock continued practically the same as in 1900, being \$5.23; the price of land pebble decreased from \$2.77 in 1900, to \$2.67 in 1901; and the price of river pebbles declined from \$2.36 in 1900, to \$2.25 in 1901.

The price of South Carolina hard rock in 1901 was \$3.18 per long ton, as compared with \$3.30 in 1900, and the average price of South Carolina river rock was \$2.56 in 1901, as against \$2.61 in 1900.

The price of Tennessee phosphate rock advanced from an average of \$1.62 in 1898, to \$2.91 in 1901, the reason being the better preparation of the material for the market and the consolidation of competing producers.

The imports of fertilizers, including guano, crude phosphates and other substances used for fertilizing purposes, into the United States during 1901 were valued at \$1,590,761.00, as compared with \$1,420,918.00 in 1900.

The Tennessee Chemical Co. is at work getting out phosphate at Columbia, Tenn.

The Board of Directors of the Virginia-Carolina Chemical Co. held a meeting at Richmond, Va., during August, and declared a dividend of 1¼ per cent., payable September 1.

E. H. & J. A. Meadows Co., New Berne, N. C., manufacturers of fertilizers, have let contract for the erection of a new plant to H. B. Simpson, who is also engineer in charge.

It is reported that the Jarecka Chemical Phosphate Works, of St. Bernard, Ohio, is erecting a new factory for the manufacture of alum. It will have a capacity of 300 barrels a day, and give employment to a number of men.

Clay.

Some Pointers About Brick.

Brick, as an article in building material, dates back to a point where history fades into oblivion. The oldest evidences of man's civilization seems to have been co-existent with their manufacturers in some form or other, and, like a great many other things, which have come down to us from remote times, they are a product of his necessities. Before the time when implements were made that were hard enough to cut wood or stone, the common clay of earth afforded the most simple means to construct a habitable dwelling without tools or implements other than which nature gave them. The mixing of clay and water and the drying by the natural heat of the sun was sufficient to make a building material which, strange though it may appear, has in many instances proved more lasting against the ravages of time than the quarried granite of the hills.

Some Early Brickmakers.

The earliest evidences of the making of brick have been found in treeless countries, or where stone was not easily accessible. We need not go out of our own country to see this. The arid wilds of Arizona and New Mexico were once peopled with a race which used this primitive material exclusively for their dwellings, and the oldest building in North America to-day is a little Catholic church in Santa Fe, New Mexico, and which was constructed with adobe brick, which is nothing more than sun-baked clay, the same as was common in old Egypt at the time when the historic "kick" of the oppressed Israelites took place.

The rapid development of the prairie States of our country has called for a building material that was cheaper and more ready to hand than any thing else, and so our forests have been utilized and to such an extent that the time is rapidly approaching when man must return to the use of the only material that nature has everywhere made so plentiful. I can remember the time in Nebraska when common building brick were as high in proportion as white pine B select is to-day. I have sold them for 3 cents apiece and never lower than \$10.00 a 1,000, but now you may go out there and you will find that more of them are being used than at any time in the history of that country. There are but few localities but what are within easy distance of a brick yard, and a fairly good article—good enough for ordinary purposes—is sold at from \$6.00 to \$7.00 a 1,000. This price brings their use within reach of every one, and as a consequence they are being used for purposes that a few years ago they were too costly, as, for instance, in the making of cisterns, these very necessary adjuncts to a dwelling were then but a hole in the ground and covered over with cement. Now, however, this primitive method has given way to the use of the more substantial one of bricking them up, and then with a coating of good cement they are practically good for a long period. There has been a good deal of experimenting in the manufacture of brick in the prairie country, and a good deal of money has been sunk in trying to make them out of the local material.

The Problem of Burning.

There are but few towns but what has had its trial on a brick yard. One thing has been against it, however, that even where they have the proper kind of material it has proven somewhat too costly in many instances. Years ago it was thought that wood was the only fuel that could be used in a brick yard, but the necessity for them has stimulated invention to the extent that a cheap grade of coal can be used, and in the way it is burned and the heat applied it has proven to be a better fuel than wood. One of the largest brick manufacturing plants in Nebraska is at Hastings, where they have made an excellent article for a number of years, and in good crop years the demand for them has greatly exceeded the capacity of the plant. I have been told that the method of burning at this place is the invention of a German who first started the enterprise. The peculiarity of it, is that instead of the fuel being put under the

kiln, as in the case of burning with wood, the coal is placed on the top, and the heat is conducted uniformly through it so that but little of it becomes wasted. I used to handle a good many of these brick during the year, and the beauty of them was that they were always so uniform in color and hardness. The proprietor once told me that he made a specialty of what he called a "lumber yard brick," and at that time he was supplying over 150 yards with this grade. I presume he has double that number for his customers at the present time. This man was smart in his catering to the trade of the lumber yards. He gave them a brick that would stand handling with a very small waste. I have unloaded 10,000 from a car and there would not be more than twenty-five broken ones in the whole lot. This fact made it something of a pleasure in selling this class of stock.

Brick Which it is a Pleasure to Sell.

It was so different from the old slop brick which we had to use in the earlier days of the trade, for in the putting them out to a customer its no easy task to make him take the broken ones, and unless he did the profits from the sale were pretty small, and, besides, if you compelled the man to take them, he was likely to go away with his "back up" against you and his trade would be lost to the yard. The sale of brick in towns where there is no brick yard, is largely confined to the lumber dealers, because it works well in with the sale of the other building material, and as most of them are sold in comparatively small quantities it pays a dealer to handle a grade a little above the common article. A dollar on a thousand is not much where there is no waste, and there are but few men wanting enough for a chimney who will demur at the price if they can get a good article; even for cisterns or foundations the average customer wants a whole brick, his idea being that if a brick is broken it is too soft for his purpose, and he will discard it every time if he is loading them all by himself. If any of my readers are lumber yard men they will readily see the force of my remarks, and if they include brick as a part of their stock I would advise them to pay a little more and get a good article, and their trade will respond, with a difference in their sales. They are getting to have another use for brick out there in those prairie towns. The people have become tired with the constant expense of keeping in repair their old wooden sidewalks and are now tearing them up and putting down the more substantial brick walk. The cost of lumber is becoming so high and that of brick is so much cheaper than it was, that there is not very much difference now in the cost of the materials, and where one man on a street has the nerve and enterprise to put one of these walks down, the example is pretty likely to be catching. It is an object lesson that has an influence to action. Even an old farmer moved to town will see that the utility of the improvement and fall into line with his neighbors.

Why the Call for Brick Increases.

It is pretty safe to predict that in the growing towns the wooden sidewalk has seen its best days, and from this on there is going to be a vast amount of brick required for this purpose. It is not only in the newer States that this condition is apparent, but in the older, settled towns as well. Most of the average towns everywhere have attained their full growth as far as the number of buildings is concerned, and the tendency now is toward the improvement of what they have, even the principal streets in many small places are being paved with brick, old cellars are being bricked up, and in many other ways is this most substantial of all the common building materials coming into more general use than it ever has done in the past. We are pre-eminently a lumber-using people; we know but little else of any other material for building purposes. When we think of a house we involuntarily think of a wooden one; it is natural, because wooden buildings are a part of our environment, but we are gradually drawing from this old idea. As a people we are more and more inclining to the solid and permanent in our structures, and instead of the make-shift ways of the earlier settlers of this country we are gradually coming to the idea of building "for keeps."

C. H. K.

The Newport (R. I.) Pressed Brick Co. has been reorganized and a number of additions made to the plant, and its future is said to look very bright. Under the reorganization the following officers and directors were elected: Melville Bull, president; William Shepley, vice president; Everett Greason, secretary-treasurer. Directors: Melville Bull, Wm. Shepley, Robert Hamilton, Chas. H. Sullivan, E. R. Taylor, Thomas Martland and John Nelson.

Converting Clay Into Brick by the Soft-Mud Process.

We had something to say in a previous article about clay and its properties, and now it is our desire to pass to the manufacture of clay into different products. Taking the article of common building brick as a start, we will find that clay has to go through four stages. Preparation, which includes crushing or tempering, or both, molding, drying and burning. Now, appliances and methods vary somewhat in each stage of the process of manufacture, and probably more in molding than in any other stage. We can take the different processes, however, and class them under four general heads: Soft-mud, stiff-mud, semi-dry press and dry-press process. Of course, each process has its peculiar points to be studied in connection with local conditions and the product desired. The process requiring the least amount of capital to start with is the soft-mud process, and it is adaptable to almost any clay. The following description of this process appears in the report of the North Carolina Geological Survey, and gives a fair idea of the process in detail generally:

The First Step in Brick-Making.

The clays used are generally soft ones, such as require no grinding. They are first tempered with water. This is done either by throwing the clay into a large rectangular pit behind the molding machine, pouring water over it and allowing it to soak, or else tempering it in ring-pits. These consist of circular pits 15-20 feet in diameter and 2-3 feet deep. In each pit there revolves a large iron wheel attached to a post in the center, and so geared that it travels back and forth from the center to the circumference of the pit as it travels around. The clay is shoveled into the pit, water poured over it and the mass allowed to soak for twelve hours, and it is then mixed by the wheel for about six hours more. This is by far the best method of tempering the clay for the soft-mud process, for it mixes the clay into a homogeneous mass, which is something a soak-pit does not do.

Many small manufacturers in the South have a rather crude arrangement for tempering their clay. It consists of a vertical rectangular box, in which there is set an upright shaft with cross-arms. The clay is thrown in at the top, and by the revolution of the shaft, operated by horse-power, it is forced slowly downward and out at the bottom. Pugmills are sometimes used in connection with soft-mud machines, but are more frequently used in connection with the stiff-mud process, and will be described under that head.

Molding the Bricks.

The clay is molded by hand or in machines operated either by steam or horse-power. When the clay is molded by hand it is generally tempered somewhat softer, often too much so. A wooden mold is used. The molder takes a chunk of clay from his supply on a table near him, and forming it roughly he lifts it up and then throws it downward into the mold, which has been previously sanded on the inside to prevent the clay adhering. The mold is then reversed into a pallet, the brick drops out and is carried off by a boy, the "off-bearer," and placed on the yard to dry. A man can mold about 2,500 to 3,000 brick a day by this method.

The day's work of molded brick, which have been spread out on the yard to dry, are turned on edge at the end of the day to permit equal drying. Sometimes a boy goes along the rows of brick, and, with a flat board fastened to the end of the stick, stamps the brick in order to square them up in case the clay is too wet to hold its shape.

Hand-molding is a cheap method, as far as cost of plant is concerned, but the capacity is small. Hand-made brick are generally porous and light, as the clay receives little pressure in molding, but they are homogeneous in structure, and when hard-burnt are usually strong.

The celebrated Philadelphia red front brick were for a long time molded by hand and then repressed.

When soft-mud brick are molded by machine the clay is fed into the upper end of a rectangular box, which is really a vertical pugmill. The clay passes downward and is forced into a six-brick mold at the bottom; the latter, as soon as filled, being thrust out. Such machines have a capacity of about 20,000 bricks a day. It requires from five to seven men to operate one of these machines, that is, a shoveler, mold-sander, mold-lander, who receives the mold and trims off the superfluous clay, and two or three off-bearers to spread the brick on the yard.

Soft-mud bricks are generally dried in the sun. As this method requires considerable space, especially when large capacity is required, it is sometimes found desirable to dry the brick on pallets, set one above the other on racks. This increases the drying capacity, avoids handling until the brick are set in the kiln, and there is no loss from washed brick. The drying takes a little longer.

Drying and Burning.

Soft-mud bricks are usually burned in scove-kilns; that is, they are piled up in rectangular masses 35-40 courses high, and open spaces or arches are left at intervals in the bottom of the pile, these arches running through the mass.

The exterior of the "kiln" is daubed over with mud, and one or two courses of brick, called the "plating," are laid flat side down on the top of the kiln to keep the heat in. Fires are then built in both ends of the arches, and the interior of the kiln is gradually heated to the desired temperature.

Burning is the most important step in the manufacture of brick. It is important that the heat should be raised slowly during water-smoking and also while the combined water is being driven off, and, furthermore, that the temperature should be distributed as evenly as possible throughout the kiln, for it is a common fault at many of the smaller yards that the arches are almost melted while the upper courses can sometimes barely be called salmon brick. In this connection there may be mentioned the practice followed by some manufacturers of adding coal dust to the brick to be placed in those parts of the kiln which do not receive sufficient heat. In burning the coal dust in the brick ignites and supplies additional heat where it is needed. The coal dust is added in the proportions of one bushel of clay for 1,000 bricks, and is added to the clay before it is tempered. Wood is the fuel commonly used in burning soft-mud brick. The arches are often closed by iron doors, and these should never be omitted, for a flood of cold air rushing into a mass of red-hot brick is sure to do damage.

If the heat is raised too rapidly, the outer part of the brick shrinks and becomes dense before the ferrous oxide of the interior has been converted to the ferric oxide, and a black core is generally to be seen in such cases; unequal shrinkage and consequent cracking also results from the same cause.

Occurrence of Glass-Pot Clays.

In Mineral Resources of the United States, 1901, now in press, United States Geological Survey, Dr. Heinrich Ries discusses the occurrence of glass-pot clays in the United States. A glass-pot is never heated until it is put into use. The preliminary warming is done in a special furnace, the heated pot being then run over to the glass furnace, where it is kept hot and filled with molten glass until it breaks or becomes eaten through. These conditions of glass-pot life cause the requirements necessary to be observed in the selection of glass-pot clay to be very severe. The clay must have sufficient refractoriness to withstand the greatest heat used without changing form; it must have sufficient plasticity to permit the admixture of 50 to 60 per cent. of grog; it must burn dense at a low temperature; it should have a low percentage of fluxes and also of silica; and its tensile strength should probably be not less than 150 pounds per square inch.

From clay having such characteristics glass pots are made by hand, being built up very slowly and carefully, so that several weeks may be required to make one pot. In many cases different mixtures are used for the bottom, sides and top of the pot. Pots often weigh as much as 3,400 pounds, and have to be sent from the factory to the glass works in their green condition. Glass pots range from \$50.00 to \$60.00 in price.

The entire supply of glass-pot clay was formerly imported from abroad, but recently such clay has been found in the United States. Considerable deposits of glass-pot clay are found in the Cretaceous and Tertiary formations of Germany and Belgium, and some of these have been worked for a number of years. Among the most important German clays are those found at Gross Almerode, and nearly all of the imported pot clay now used in the United States comes from this locality, very little or none being imported from Belgium.

The native pot clays thus far discovered and used are obtained from the carboniferous formations of Pennsylvania and Missouri.

In Western Pennsylvania clay for glass pots is mined near Wymps Gap Post Office, and near Layton Station, in Fayette County, and in Cambria,

Clarion and Clearfield Counties.

The Missouri glass-pot clays are obtained in the carboniferous formation in the vicinity of St. Louis, from the mines of the Christy Fire Clay Co., and from the Coffin Mine, the Glassmakers' Pot Clay Co.'s mine, and from the Jamieson and French Fire Clay Co.'s mine, near Gratiot Station, St. Louis.

Analyses of the Missouri as compared with the German glass-pot clays shows that the former are more refractory and that the latter are denser, burning at a low temperature.

Some clays of moderate refractoriness and dense burning character from the lower cretaceous beds of Alabama also have been described by Dr. Ries.

The Driftless Area of Wisconsin.

What is known as the driftless area in the clays of Wisconsin comprises that portion of the State which has not been modified by the ice sheets of the glacial period in the Southeast portion of the State. In this area surplus deposits of clay are the result of rock disintegrations or deposits from streams and air. The underlying rock consists of sandstone and limestone. The distinction is pointed out in the report of the Wisconsin Geological Survey between the make-up of this area and the clay of two classes previously treated, in that clay under discussion now is mainly a decomposition of country rock, while those previously discussed has resulted very largely from disintegration of the underlying rock.

The following are some of the industries listed by this report as working this clay:

At Arcadia, Wis., there are two brick yards, one owned by Ernest Pahl and the other by Zimmerman & Co. The clay of both yards is essentially the same, but Pahl makes brick by hand and Zimmerman & Co. use the Quaker soft-mud machines, and both use scove kilns.

Max Stegman has a small yard about four miles from the town of Bangor, Wis., which turns out brick of a light red color.

At Bloomington, Wis., is located what is known as the Bloomington Brick Yard, of which Mr. Hutton is proprietor. This yard turns out about 3,500 common red brick each season.

At Cassville, Wis., James Barrows & Sons have a brick yard where clay is a yellowish brown color and appears to be of sedimentary formation.

At Elroy, Wis., E. N. Loveland and J. Wade operate a brick plant with a clay that is a yellowish brown color, but burns red.

About two miles West of Galesville, Wis., is a brick yard operated by B. T. Dale. This yard turns out about 500,000 bricks a year, mostly for the local trade.

At Hillsboro, Wis., Jos. Bezucha has a brick yard operating with a deep reddish brown clay. This yard was formerly operated by hand, but of late years has been equipped with modern machinery throughout.

At Independence, Wis., Henry Hartzfeldt has a brick plant which produces a red colored brick common to that locality.

About three miles East of La Crosse, Wis., is the yard owned by Anton Keppel, which has been in operation for more than a quarter of a century. About a quarter of a mile from this yard is the yard of Herman Keppel which has been in operation over thirty years.

Mike Meyer has a brick yard East of La Crosse, Wis., which was opened in 1883, and has been operated continuously since.

About four miles East of La Crosse is the brick yard owned by Schnell Bros., which was opened in 1890. This yard turns out something like 1,000,000 bricks a year.

At La Farge, Wis., there is only one brick yard, which is owned by V. V. Miller, which turns out about a quarter of a million brick a season.

William Barrows has a brick plant at Lancaster, Wis., where the clay formation is a little bit peculiar. Well borings indicate that clay has a maximum depth of forty feet, and the clay as now worked to a depth of only three feet. The next three feet immediately underneath this is very hard, and brick made from it show a tendency to crack, but underneath this layer there is said to be ten feet of smooth, putty-like, blue clay.

The Dayton Brick Co. has a brick yard at Mauston, where the Penfield stiff-mud process is used.

The only brick yard at Platteville, Wis., is that of John Grindell. This is said to be the only brick yard in the State where the power is furnished by gasoline engines.

At Reedsburg, Wis., there are three brick yards. Fred. Bergmann's yard is located about a mile Southwest of the city, and Henry Fuhlbohm has a yard near that of Fred Bergmann, and at the writing of this report was said to be idle. About a mile West of Reedsburg is a yard owned by Lewis Halbersleben. All the brick manufactured in this vicinity burn red.

At Richland Center, Wis., Louis Minisni has a brick yard operating a sandy clay that burns red.

The Sparta Brick Works, of which P. S. Sparling is proprietor, are located at Sparta, Wis., and they manufacture brick by the Quaker soft-mud process, turning out about a half million brick a season.

At Spring Green, Wis., G. F. Post has a brick yard operating in clay of a bluish cast, streaked with red and yellow.

At Soldiers Grove, Wis., Atley Peterson operates a brick yard working with clay that is a reddish brown color.

The only brick yard at Viroqua, Wis., is that of Silas Foster, where they use the Quaker soft mud machines. This yard is also supplied with an excellent red sand for modeling, which gives the brick a cheerful red color. This sand is also used for coloring mortar, and as such answers the purpose of the red pigment, which is ordinarily used for this work.

At Wonewoc, Wis., Benjamin Truber has a brick yard operating by the soft-mud process in a blue clay streaked with yellow.

HERE AND THERE IN THE CLAY FIELD.

Patrick Fahey has bought an interest of John C. and Wm. Deegan, in the West Junction (Del.) Brick Co.

The Standard Fire Clay Co. has been incorporated at Fallston, Pa., with a capital stock of \$35,000.00.

James A. Wilson, of Paw Paw, Ill., has bought land at Spencer, Ia., and will build a brick plant to cost \$10,000.00.

The plant of the Cambridge (Ohio) Brick and Tile Co. was damaged by fire recently to the extent of about \$4,000.00.

Mr. Jno. F. Hutter, of Spokane, Wash., has opened up a brick yard at Coeur d'Alene, Idaho, to manufacture pressed brick.

Reports from Baylor, Ill., state that S. J. Staley, of Birch, Ill., has almost completed his brick kiln, which will contain 150,000 bricks.

The firm of the Packer Manufacturing Co., of New York, has purchased land at Mystic, Conn., and will erect a large brick factory.

Reports from Jasper, Tex., state that the Jasper Brick Co. has purchased a \$12,000.00 plant, and is preparing to put in their machinery.

Reports from Lorain, Ohio, state that the United States Steel Corporation has purchased the plant of the Lorain Brick Yard, adjoining them.

The Burns Fire Brick Co., Williamsport, Pa., is having an active season, and it is said they will add to their equipments a crusher and a crushing plant.

Mr. Otto Miller, a new brick manufacturer at Mishawaka, Wis., appears to be progressing nicely with business, and finding ready sale for his product.

The Coffeerville Brick and Tile Co. has been incorporated at Pierre, S. D., with a capital stock of \$600,000.00. The incorporators are: A. C. Stish, A. Shulters, L. L. Stephens.

Reports from Warren, Ark., state that J. N. Wheeler is contemplating establishing brick works with a capacity of 35,000 bricks a day. The machinery has been purchased.

The Bartonville Brick Co., Peoria, Ill., has been organized with a capital stock of \$6,000.00. The incorporators are: John H. Francis, Mary and Devere Sholl and Lizzie and John Kay.

The Guthrie Pressed Brick and Tile Co. has been incorporated at Guthrie, Okla., with a capital stock of \$20,000.00. The incorporators are: C. H. Anderson, A. Z. Clark, M. L. West and others.

The Waynesburg Brick Co. has been incorporated at Waynesburg, Pa., with a capital stock of \$10,000.00.

The plant of the Boone Pottery Co., Boone, Iowa, was destroyed by fire August 1. Loss estimated at \$6,000.00.

Harry Kohl, G. E. Cis and A. L. Cruzen have formed a stock company and operate a brick plant near Walnut Hill, Ill.

The Burns & O'Sheal Brick Co., Detroit, Mich., recently secured contract from the Solvay Process Co. for six million bricks.

Daniel A. Cline, of Baltimore, Md., recently bought at mortgage sale the plant of The Cecil Fire Brick Co., at North East, Md.

The United States Brick Co. has been incorporated in South Dakota with a capital stock of \$1,000,000.00. Its headquarters will be at Detroit, Mich.

The Onondaga Pottery Co., Syracuse, N. Y., has voted to increase its capital stock from \$200,000.00 to \$250,000.00 to re-imburse the company for improvements recently made.

Samuel J. Rose, Chester, Del., who is the inventor of a kiln for burning paving brick, is said to be organizing a company to build a plant to manufacture vitrified brick.

The Clow Clay Product Co. has been incorporated at Glenwood, Wis., with a capital stock of \$10,000.00. The incorporators are: John A. Clow, Floyd A. Shults and Frank W. Bagan.

Marcey & Gardner, brick manufacturers of South Amherst, Mass., are having an unusually busy season, and have enlarged their capacity so as to turn out 5,000,000 bricks during the season.

The Phoenix Brick and Construction Co. has been incorporated at St. Joseph, Mo., with a capital stock of \$100,000.00. The incorporators are: E. F. Halsey, F. H. Halsey, H. N. Rice and E. T. Halsey.

The East Alton (Ill.) Stoneware Pipe Co. has let a contract to Chas. Deganhardt for rebuilding of their works. The plant is to cost something like \$16,000.00, and to be completed in sixteen days from date of letter.

Harry Branstetter, of the Branstetter Brick and Tile Co., Gallion, Ohio, has made an assignment to L. C. Barker for the benefit of his creditors. His many friends hope that he will soon be able to resume his business again.

J. M. Brownson, F. B. Lander, Jno. W. Sloan and I. A. Heath have acquired the property of the Victoria Brick and Tile Co., Victoria, Tex., and have employed W. R. Gibson to make brick for them. Work is now in progress.

The Kiesel Fire Brick Works has been organized at Kittery, Me., for the purpose of manufacturing fire brick with a capital stock of \$10,000.00. The officers are: Horace Mitchell, of Kittery, president; A. M. Meloon, Newcastle, N. H., treasurer.

It is reported that the Waco Mining and Manufacturing Co., at Searcy, Ky., (P. O. Waco), is to build seven additional small kilns and a large brick kiln of a capacity of 250,000 a day. Mr. W. P. Dickey, of Lexington, Ky., is secretary of the company.

It is reported that the Des Moines Brick Manufacturing Co., Des Moines, Ia., is to be put in operation. This plant has not been in operation for fully a year. It has a capacity of 60,000,000 bricks a year. Mr. S. A. Robertson is largely interested.

It is said that the Amman & Gahring brick yard, at Decatur, Ill., has been put in operation, and now from 10,000 to 12,000 bricks are being turned out each day. It is the intention of the firm to build two kilns of 200,000 capacity. They will invest \$10,000.00 in it.

The Fort Scott Pottery Co., Ft. Scott, Kan., has been incorporated with a capital stock of \$10,000.00. This plant is operated by W. H. Clark and his son, Gale Clark. It is reported that a vitrified brick plant will be established and run in connection with the pottery business.

It is reported that the Louisville and Portsmouth Fire Brick Co., at Soldier, Ky., with \$100,000.00 capital stock, has elected J. H. Sale, Louisville, Ky., president, and L. P. Halderman, secretary. It is preparing to build an extensive plant. L. A. Bellinger, Ashland, Ky., is getting up the plans.

The Texas White Brick Co. has been incorporated at Paris, Tex., with a capital stock of \$20,000.00. The incorporators are: W. E. Griffith, Pittsburg, Pa.; C. K. MacFadden, Geneva, Ind.;

R. A. Greer, Beaumont, and W. P. H. MacFadden, Beaumont.

The Yankee Hill Brick Co., which has been in business at Yankee Hill, near Lincoln, Neb., for a number of years, has been incorporated with a capital stock of \$100,000.00. The incorporators are: S. W. Burnham, S. H. Burnham, W. H. Ferguson and A. L. Clarke.

The National Brick, Stone and Terra Cotta Co., Yonkers, N. Y., has been incorporated with a capital stock of \$100,000.00. The incorporators are: Charles H. Burke, Manhattan; F. Olenacher and son and Louis F. Kwiatkowski, New Indiana; H. Huennekes and John Bergeyork.

The Kansas City Shale Brick Co. has been incorporated at Kansas City, Kan., with a capital stock of \$60,000.00 to manufacture and deal in shale brick and tile. The incorporators are: George Withoff, Claude Hardwicke, George Coomber, J. J. Steadale and R. W. Stogdale.

Reports from Toronto, Ohio, state that Robt. McCamperty, a well-known brick man, has been negotiating for the plant of the Lone Star Brick Works, with a view to putting it in operation again. The plant is situated a few miles below New Cumberland, Ohio, and has been idle for some time.

Reports from Goshen, Ind., state that there is a move on foot to organize a stock company with a capital stock of \$10,000.00 to operate the brick yard now owned and operated by Chas. Crowell. The object of the incorporators is to add some capital to the business and increase operations.

The Empire Brick and Supply Co. has been organized at Stockport, N. Y., with a capital stock of \$1,500,000.00 to manufacture and deal in brick. The directors are: John F. Charlton, Noel Gale, Edward H. Warren, Edward S. Thurston and Francis S. McGrath. Office, 40 Wall Street, New York City.

The Arlington Improvement Co. has been incorporated at Arlington, Tenn., with a capital stock of \$12,000.00. The incorporators who have already incorporated the Tennessee Brick Co., with a capital stock of \$10,500.00, are: R. L. Bruner, Tate L. Ernest, John H. Bowman, S. C. Williams and Walter Bowman.

The Columbia City Clay Product Co. has been incorporated at Indianapolis, Ind., with a capital stock of \$100,000.00. The company will probably erect a clay plant in Clay County, but the main offices will be in Indianapolis, Ind. The incorporators are: James S. Cruse, Wm. A. Rhodes and George W. Seibert.

The Nanticoke Brick and Tile Co., Union, N. Y., which recently purchased clay land near there, is commencing operations. The kiln capacity of their plant is 150,000 bricks, and the company is said to have orders on hand to keep them busy for some time. The officers of this company are: George D. Lincoln, president; John H. Swift, vice president; George W. Crane, treasurer and general manager.

ARTIFICIAL STONE.

Ben Segner and Frank Johnson have bought from John Lewis, of Des Moines, Ia., his plant for manufacturing artificial stone and cement sidewalks, etc., and will operate it under the firm name of Asheston Stone Co.

The Warren Concrete Block Co., is one of the new industries of Warren, Pa. This concern manufactures concrete blocks by the Palmer process of cement and sand. The officers of the company are: A. L. Pixley, president, John Best, treasurer; Wm. Hazelton, secretary.

What is said to be a new process for the manufacture of artificial marble, originated in Berlin, and consists of the use of asbestos, dying material, shellac and ashes which are pounded into a stiff mass and then subjected to high pressure. The product is said to be surprisingly firm and tough, and very easily worked, taking a fine polish and presenting the appearance of genuine marble.

The Michigan Cement, Brick and Moulding Co. has been incorporated at Flint, Mich., with a capital stock of \$25,000.00. The officers of the company are: B. C. Murray, formerly of Ovid, president; W. J. Gould, formerly of Saginaw, vice president; and Olin T. Wells, of Flint, secretary-treasurer. All but \$10,000.00 of the stock has been subscribed by the three principal stockholders named, and of this amount \$5,000.00 has already been taken by local investors.

Asphalt.

Robert Hocke, of Chattanooga, Tenn., who is the inventor and manufacturer of a portable asphalt repair plant, has sold a plant to the city of Binghamton, N. Y.

It is said that a plan is on foot in Philadelphia for forming a new asphalt company, of which Dr. Ludwig S. Philbert, former president of the Vulcanite Paving Co., will be president.

The Economic Asphalt Street Repair Co. has been incorporated at Denver, Colo., with a capital stock of \$1,200,000.00. The incorporators are: John W. Nesmith, John H. Morcom and Andrew W. Gillette, Denver.

Reports from Elizabethtown, Ky., state that W. G. Hutchinson, of that place, has sold 300 acres of asphalt land near there to the Kentucky Rock Asphalt Co., who expects to be getting out 100 tons of asphalt a day by September 1.

The Warren Bituminous Waterproof Pavement Co. has completed its plant at Cameron and Mulberry streets, Harrisburg, Pa., and at this writing is ready to begin laying pavements. The work at this place is in charge of R. R. Hoyt.

At an annual meeting of the stockholders of the Grant Paving Co., of Omaha, Neb., D. R. Cox was elected president; W. R. McGlaughlin, vice president; W. F. Miller, secretary and treasurer, and Clifford Howe, superintendent. The new officers are mostly the employees or people interested in the Barber Asphalt Co., which is said to own something like 75 per cent. of the stock of the Grant Paving Co. Heretofore the Barber Asphalt Co. seems to have left the management of the company in the hands of the Omaha men, who were interested as minority stockholders, but this year have asserted their authority and placed Barber men to manage same. President Cox will retain his headquarters in Chicago where he is employed by the Barber Asphalt Co.

SAND.

Thomas Stringer will open a sand bank near Brilliant, Ohio.

Reports from Philippi, Md., state that M. F. Green & Co. contemplate establishing a plant for manufacturing sand from sandstone.

The Hancock White Sand Works, Hancock, Md., has been sold to the Pennsylvania Sand and Glass Co. by the Kingsley syndicate. Mr. William Noel, the present superintendent, will continue with the Pennsylvania company. There are great quantities of sand a few miles West of Hancock.

Ed Nicholas and Castner Bros., Steubenville, Ohio, have erected a new office at their sand pit, and are working eight men and the force will be increased as the work demands. This is said to be one of the best equipped sand plants in the United States. All the machinery is of the latest pattern.

SLATE.

Chas. R. New, Poultney, Vt., has sold six acres of property to the Mathews Slate Co., of Middle Granville, N. Y.

The Cambria Slate Co. has been incorporated at Delta, Md., to develop slate property. We are informed that the company will be financed by the Union Trust Co., Fayette and Charles Streets, Baltimore, Md.

The Helmbach Slate Co., Bethlehem, Pa., has been incorporated to manufacture and sell slate products of all kinds. Capital stock is \$50,000.00. The directors are: Jay S. Moyer and A. N. Brown, of Bethlehem, and Frank Jacobs, of Allentown.

The Southwestern Slate Manufacturing Co., Slatington, Ark., has increased its capital stock to \$10,000,000.00. Mr. Curtis Wright, of Carthage, Mo., is president of the company. They have quarries at Slatington and a railroad is to be built immediately from there to Hot Springs, 56 miles away.

Trade Prospects.

Weatherford, Tex., will construct waterworks.
Dallas, Tex., contemplates further asphalt paving.
Joliet, Ill., is preparing to do some asphalt paving.

Ruston, La., will spend \$10,000.00 improving its light plant.

Bardwell, Ky., is figuring on building an electric light plant.

Waco, Tex., has issued \$200,000.00 in bonds for waterworks.

A new library is to be erected at Aurora, Ill., to cost \$60,000.00.

Leavensworth, Kan., is preparing to do some asphalt paving.

Cincinnati, Ohio, is preparing plans for further asphalt paving.

Dr. Walter R. Scroggs will build a sanitarium at Palo Alto, Cal.

Davenport, Ia., will build a new school house to cost \$40,000.00.

A new school house is to be built at Delray, Mich., to cost \$50,000.00.

Philadelphia, Pa., is to build a new school house to cost \$50,000.00.

The town of Ruston, La., will add quite a lot of electric machinery.

Evanston, Ill., is figuring on spending \$250,000.00 for sewer construction.

Gulfport, Miss., will spend \$10,000.00 making additions to a public school.

The city of Fayetteville, N. C., is figuring on installing an electric light plant.

Hartford, Conn., is figuring on building a new court house costing \$90,000.00.

The Citizens' Electric Railway Co. will ask for franchise in Fort Worth, Texas.

The Oblate Fathers, of San Antonio, Tex., will erect a seminary to cost \$70,000.00.

The city of Lecompte, La., has voted \$10,000.00 for the construction of waterworks.

The city of Portland, Oregon, is preparing to lay a number of cement sidewalks.

Orange, N. J., is preparing to spend \$45,000.00 on an addition to one of its schools.

The city council of Arcola, Ill., has voted an appropriation of \$14,000.00 for paving.

George Murphy and others have applied for street railway franchise at Sherman, Tex.

The Houston (Tex.) Electric Light Co. will spend \$100,000.00 or more improving its plant.

The city of Cuero, Tex., will spend \$15,000.00 for the erection of City Hall. Address the Mayor.

H. N. Shelberne, W. A. Holloway and others will erect an electric light plant at Plaquemine, La.

The Lexington (Miss.) Ice, Light and Water Co. is figuring on installing an electric light plant.

Bonds to the amount of \$250,000.00 for building water works at Columbus, Ga., have been issued.

The Oscaloosa Traction and Light Co. contemplates erecting a power house, etc., at Ottumwa, Okla.

The city of Mayfield, Ky., is to vote on issuing \$40,000.00 worth of bonds to construct sewerage system.

Galveston, Tex., is to hold an election September 2, to vote on issuing \$175,000.00 in bonds for waterworks, etc.

The Atlantic Water Power Electric Co., Atlanta, Ga., is building a dam and will install an electric light plant.

The Union Light and Power Co., St. Louis, Mo., are figuring on spending \$10,000.00 improving their plants, etc.

It is reported that Baldwin, Ga., is to have water power and electric plant. W. D. Lewis can give information.

The city of McKeesport, Pa., is talking of holding a special election for voting \$100,000.00 for building sewers.

The New Martinsville Electric Light and Power Co. will ask New Martinsville, W. Va., for franchise for street railway.

The Baltimore and Annapolis Electric Railway Co., Washington, D. C., contemplates erecting a new power plant.

The plans of D. X. Murphy & Bro., for a new jail at Louisville, Ky., have been accepted that is to cost \$196,000.00.

The county authorities of Riverside, Cal., will let a contract some time in September for a court house to cost \$150,000.00.

Furgeson & Harkness, of Meridian, Miss., are preparing plans for a \$50,000.00 court house and jail for Gulfport, Miss.

Baldwin & Pennington, Baltimore, Md., are preparing plans for a \$50,000.00 church for St. Catherine's Catholic congregation.

St. Louis, Mo., will spend \$60,000.00 reconstructing the old Blow School at Carondelet, of which Professor W. D. Butler is principal.

Reports from Des Moines, Ia., state that The Blue Line Transfer Co. will build a gigantic warehouse that will cover 198,000 square feet floor space.

A company has been organized by R. L. Zell and others at Birmingham, Ala., with a capital stock of \$1,000,000.00 to construct and operate water works system.

It is reported that Alexandria, La., is to have a new court house to cost \$71,000.00, and the plans of F. B. and W. S. Hill, of Jackson, Miss., have been accepted.

The Treasury Department of Washington, D. C., will receive bids up to September 30, for the electric equipment of the post office building at Indianapolis, Ind.

The Coweta Power Co. has been organized at Columbus, Ga., by John J. Baldwin, of Savannah, and J. A. Flourney, of Columbus, to develop water power and an electric light plant.

The city clerk of Toledo, Ohio, will receive bids up to August 11 for paving, etc. Parties desiring to bid should write to Chas. Nantes, city clerk, Toledo, Ohio, for full particulars.

The United Norwegian Lutheran Church, of Minneapolis, Minn., is at the head of a movement to build a Norwegian hospital in Minneapolis to cost not less than \$100,000.00.

Sacramento, Cal., is in the midst of four elections at this writing, which involve a proposition to issue bonds for over a million dollars for school and other public buildings, etc.

Davenport, Iowa, is to let contracts August 5 for macadam to repair streets of the city, and also stone for police station. For further information address the Board of Public Works.

The city of Toledo, Ohio, will let a bunch of paving contracts September 8, which includes several kinds of paving material. Also bids for other work will be received up to September 15.

The Danville Power and Manufacturing Co., Danville, Va., are figuring on installing a water power and electric plant. The engineers are Lockwood, Green & Co., Boston, Mass.

The city comptroller of Dayton, Ohio, will receive bids up to September 5 for brick or asphalt paving and curbing in accordance with plans and specifications on file at the office of the city engineer.

Reports from Nashville, Tenn. state that The Cumberland Manufacturing Co. has purchased from Mr. Sanford Duncan, trustee, a tract of fifteen acres of land for \$12,000.00 to be used as a site for a large electric power plant.

The County Commissioners Court had a special session at Galveston, Tex., the latter part of August, and ordered the clerk of the court to prepare new specifications for constructing the seawall of that locality, declaring all old bids off.

Monuments.

Ross Clifford has recently opened up a monument business at Norwich, N. H.

The Hastings (Neb.) G. A. R. is raising funds to erect a monument to the unknown dead at Parkview Cemetery.

The city of Cleveland, Ohio, will probably erect a monument to Andrew Richoff, late superintendent of schools in that city.

Camp Sumter, U. S. Confederate Veterans, Charleston, S. C., have started a fund for a monument to the memory of General Wade Hampton.

Department Commissioner Walton Weber, of the Grand Army, of Columbus, Ohio, has started a movement to raise funds for a monument to General Wm. H. Gibson.

The Commission Cavalry Association has appointed a committee of five men on the erection of a monument. The president of the association is N. L. Smith, of Hartford, Conn.

Arthur Beebe, Syracuse, N. Y., and the Onondaga Historical Society are talking of erecting a monument to the memory of Captain Branch, who died of fever at Onondaga Valley 1812.

At an annual reunion of the Fifty-second Ohio Voluntary Infantry in August, Col. J. M. Cook, of New York City, started a movement to erect a monument on Lookout mountain.

The Vicksburg Monument Commission has awarded the Hughes Granite Co., Clyde, Ohio, a contract to furnish thirty-eight monuments, total value footing up nearly \$40,000.00.

Suitor & Auringer have just recently started in business at Neely, Neb. Mr. Suitor is the financial and business man of the firm, and Mr. Auringer is the practical man, having formerly been connected with McNeely Bros., at Marshalltown, Iowa.

The Association of American Cemetery Superintendents met at the Copley Square Hotel, Boston, Mass., during August, and President Frank Eurich made a radical suggestion in his opening address that monuments be abolished, or at least subordinated to some general scheme to develop each part of the cemetery as a harmonious whole.

The Commission of the Alumni Association, of Rochester, N. Y., is making every effort to close up final contributions for a monument to Dr. Martin B. Anderson, who for many years was at the head of the university. The commission wants something like \$15,000.00, and when all funds are available will erect a monument in the circle in front of the Anderson hall. The secretary of the company is Herbert J. Menze.

The University of Pennsylvania, Philadelphia, Pa., is planning to erect a new building to cost \$600,000.00. The architects are Cope & Stewardson, 320 Walnut Street, Philadelphia, Pa.

The Board of Education, New York City, will erect a school building at 177th Street and Bryant Avenue to cost \$120,000.00. The architect is C. B. Snyder, 59th Street and Park Avenue.

Consul General C. E. Turner writes from Ottawa, Canada, that the General Electric Co. is erecting a plant to manufacture mica, and has leased the plant formerly occupied by the Ottawa Porcelain Co.

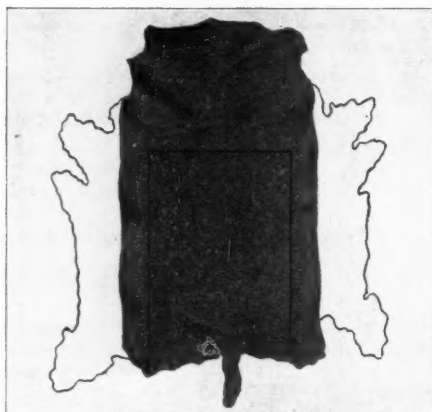
The Columbia Club, with temporary quarters at 147th Street, New York City, will build a new club house to cost \$80,000.00. The building will be three and a half stories high, constructed of brick, limestone and terra cotta.

A new brick and steel building is to be built at the Navy Yard, League Island, Pa., to cost nearly \$60,000.00. Address Mordecai T. Endicot, Chief of Bureau of Yards and Docks, Washington, D. C.

Side Talk.

How Leather Belting Is Made.

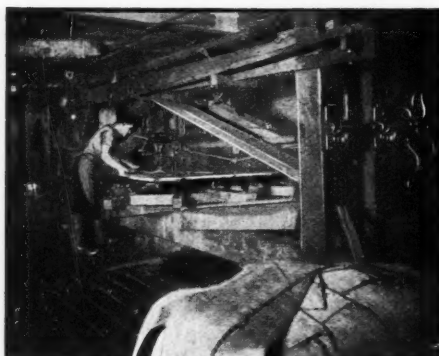
Few people have any idea of the various interesting processes through which the rough leather must be put before it can be used for belting, to say nothing regarding the different stages



THE RAW MATERIAL.

of the actual manufacture of the finished product.

In making a tour of inspection, one's attention is first called to the rough leather in the state in which it is received from the tannery—it being



THE SCOURING MACHINE.

then in the shape of what are known as belting butts, each butt representing the tanned hide of one animal.

The first step is the cutting of the rough leather into pieces 4 ft. long—measured from the point



THE CURRYING PROCESS.

of the butt where the tail has been cut off—which length, in even the smallest hides, does not include a particle of shoulder stock. The length of pieces cut from the rough butt varies greatly with different manufacturers, but with the Chicago

Belting Co. the limit is set at 4 ft., it being their aim to make nothing but strictly "short lap" belting in all that the term is intended to convey, as exemplified by their "Reliance" brand of goods.

Next comes the process of "scouring," which, as implied by its name, is designed to clean from the pores of the leather all dust and dirt accumulations gathered in the tannery and while in transit. This scouring is accomplished by a machine which operates with a sweeping motion a bristle brush and a stone, in conjunction with a constantly running stream of water, leaving the leather perfectly clean and the pores ready, after the process of "shaving"—which is that of removing the superfluous flesh, in order that there may remain nothing but the solid fiber, for the process of "currying," wherein lies one of the essentials of successful belt manufacture. This currying is the art of forcing into the leather the natural animal oils which tend to lubricate and minimize the friction caused by the working or rubbing against each other of the individual's fibers of the leather. It is this lubrication which elongates the life of the leather, and, unless the operation is most thoroughly understood, the result is that the belting soon



EXTERIOR AND INTERIOR VIEWS—HOME OF THE CHICAGO BELTING CO.

becomes brittle, cracks, and is rendered entirely worthless for the transmission of power.

The leather is now ready for the "stretching" rooms, where it is put in frames especially designed for the purpose, clamped fast, and each piece individually stretched by hand power. This operation must also be thoroughly understood, as each piece of leather is, almost, "a law unto itself," and extreme care must be taken that the elasticity be not destroyed. The nature of the different hides varies so greatly that all can not be subjected to the same amount of tensile strain. The effect of over-stretching is to make the leather "dead," and a belt made of such leather is practically worthless. These defects, however, only develop after short service.

The stock is now ready for the secondary stages, and leaves the "currying department" for the belt shop.

The "stripping" room now gets the leather, and it is cut into the widths required. From the

"stripper," the pieces are dropped through a chute to the "assembling" or laying-out room, where the stock is carefully inspected, selected as to uniformity, and prepared for the press men, into whose hands it falls, after first being "scarfed."



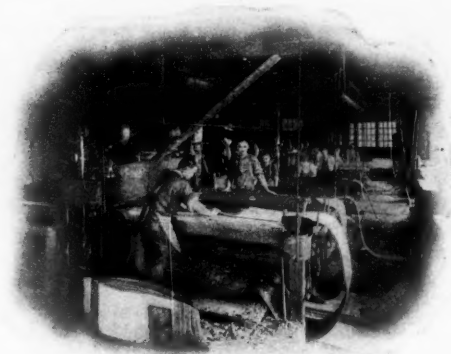
VIEW OF INSPECTING ROOM.

"Scarfig" is the technical name for the cutting of the splices—or chamfering—of the ends preparatory to making the joints. The work of the scarfing machine is augmented by the hand scrapers—mechanics who cut down to a "feather" edge



THE SCARFING MACHINE.

the rather thick ends left by the machine. This operation is responsible for the extremely accurate and almost imperceptible joints found in the "Reliance" belting of the Chicago Belting Co., as in fact, their entire product.



THE PRESS ROOM.

The "press room" now receives the stock, and the pieces are jointed together with the aid of special preparation, finishes the last stage of the is considered a trade secret), under a hydraulic pressure of 125 tons. From the reels behind the

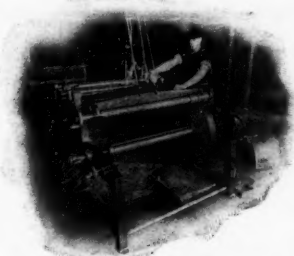


AN 86-IN. PRESS.

presses, which, by the way, range from 30 in. to 86 in., whereon the pressman rolls the belting as he finishes it, the belting is taken and sent to the "trimming room," where the edges are trimmed by means of a machine, which simultaneously measures, trims (through the adjustment of a set

of knives) and rolls the belting ready for the polishing machine. The polishing machine consists of a rapidly revolving table, whereon the roll of belting is clamped, and a stiff bristle brush, which, rubbing at high speed on the edge of the roll, which has previously been treated with a special preparation, finishes the last stage of the manufacture—that of polishing the edges.

For the Southern climates, the belting is oil-dressed, which renders it impervious to moisture.



IN THE TRIMMING-ROOM.

Riveting is also sometimes specified, and in such cases the work is performed on power self-feeding machines. The Chicago Belting Co. is now in the thirteenth year of its existence and their business this year is an ample refutation of the "thirteen superstition." Orders have never been so numerous or large, the factory being busy to its full capacity to keep up with its orders. The company is officered by men who are practical in every de-



THE RIVETING MACHINE.

tail of the business, and they are ably assisted by a competent corps of men, both in the sales and accounting departments. There is an air of hustle around their offices, which not only is responsible for the enormous business they are doing at the present time, but augurs well for their future success.

The Louisville agents of the "Reliance" belt are Waters & Garland.

G. A. Bailey, president of the Cherry Red Pressed Brick Co., Correctionville, Ia., is very enthusiastic over a clay deposit in this locality. He says in a newspaper interview that they have the finest clay in the country, and the only clay bed of magnitude that is absolutely free from alkali. They have already begun to manufacture brick, and if the industry proves a success that they think it will, they will double the size of the plant.

The Rockland-Rockport Lime Co., Rockland, Me., have just completed the equipment of the plant for manufacturing their prepared lime by a patent process. Just what this process is they do not say, but in reply to an inquiry they send us a folder which gives an idea of the claims they make for the lime. The lime, after being burned to powder and bolted the same as flour, is already to mix into water just as one would mix cement or plaster. In using this lime in connection with cement, mixing is facilitated, for dry lime can be mixed with cement in any desired proportions, after which water can be added to bring the mixture to a proper consistency. When mixed this way no heat whatever is generated, so that the quality of the cement is not impaired. Among other claims for this lime they state it can be used for any proportions for which lime is commonly used, will not air slack, but will retain its setting qualities for an indefinite time. It will not swell or pit on the wall, and is always ready for immediate use by the simple use of water to make a paste to desired consistence. These, they say, are broad claims, but can be substantiated by facts, and they invite experiments and investigations by users of lime.

Personal.

C. H. Defrees has been awarded a street paving contract at Niles, Mich.

The Bell Pottery Co., Findlay, Ohio, will erect a new pottery plant East of Columbus, Ohio.

Messrs. Fielding & Shepley have a contract for paving West Seventh Street, St. Paul, Minn., with sandstone.

The Saginaw Salt Co., has recently expended quite a lot on improvements at its plant at St. Cloud, Mich.

It is said that a valuable deposit of asbestos has been found near Ishpeming, Mich., and a company will be organized to develop same.

The stone crushing plant belonging to the city of New Haven, Conn., has been destroyed by fire. The loss is estimated at \$5,000.00.

The Webb Granite and Construction Co., Worcester, Mass., has a contract to furnish stone for the new city hall at Newark, N. J.

The Hiawatha Salt Co. is building a salt plant near Wyndotte, Mich., adjoining the property of the Pennsylvania Salt and Chemical Co.

Eckert & Peabody, who have a quarry near Monroe City, Mich., are to increase their operating force so as to turn out 20 carloads of material a day.

The Interstate Paving Co. has erected a new asphalt plant on Varick Avenue, Brooklyn, N. Y., and have contracts for paving a number of streets in that burrough.

We have received from Edwin C. Eckel, of the United States Geological Survey, Washington, D. C., the first of a series of summaries of the literature of structural materials.

In every walk of life you find a man with some connection with the stone business. One of the best known in New York State is B. S. Coler who has interests at Medina, N. Y.

Chas. A. Bartow, of Columbus, Ohio, it is said, has been awarded the contract to pave what is known as Navy Island, in Oxford, N. Y. The contract includes sewers, curbing, etc.

It is reported that an alabaster deposit has been discovered on the farm of Henry Evers, near Scott, in Crawford County, Wis., and preparations are being made to develop the property.

Mr. F. H. Gates, of Chittenango, N. Y. has bought in at mortgage sale, the property of the Chittenango Pottery Co., and it is reported that he will organize a company to operate the plant, which has been idle for some time.

General Manager Boyce, of the Sterns Lime Co., Chicago, said that they had a very busy year. Their quarries in lime and crushed stone business have been exceedingly active, and they look forward to a good year's business.

The Cleveland Stone Co. say in a recent interview that they are exceedingly busy, and that there was never quite such a demand as there is at this time for grindstones. This they attribute to the activity in the iron and steel industry.

Byron Eldred, Box 2048, Boston, Mass., has recently applied a process of his to a rotary kiln for burning cement, which is said to show a saving in fuel for one of the most economical plants in the country of something like 33%, per cent.

The Filbert Paving and Construction Co., of Philadelphia, Pa., has been incorporated in Delaware with a capital stock of \$250,000.00. The incorporators are: R. Y. Filbert and T. D. Taggart, of Philadelphia, and John G. Gray, of Wilmington, Delaware.

The Merrill Process Co. has been incorporated at Jones' Point, Rockland County, N. Y., to manufacture cement, lime, brick, etc., with a capital stock of \$250,000.00. The incorporators are: Frank M. Clute, Lislaw L. Lewis, Richard H. Jaeger, of New York City.

C. C. Torr & Co., Logansport, Ind., have leased the Lux lime kilns which they have been repairing and expect to operate them and manufacture lime.

We received this month from the Jeffery Manufacturing Co., Columbus, Ohio, special catalogue and price list No. 62 A, which is devoted especially to the Jeffery water elevators, in which is illustrated elevators and conveyors of divers kind for handling water, either by horse power or steam power.

H. K. Porter & Co., 532 Wood Street, Pittsburg, Pa., have done a nice business among the lime and stone people of the East. They have just shipped two locomotives to stone people at Youngstown, Ohio, and have orders from the Lake Erie Lime Works, also the Union Stone Co. and the Bessemer Lime Co., at this time.

We received from the Lunkenheimer Co., Cincinnati, Ohio, their latest illustrated catalogue, illustrating their well-known line of brass and iron goods and steam specialties. This book every steam user should have, and we hope that those who are not already in possession of it will write for a copy, for it contains a fund of good information besides being an encyclopedia of barrels and steam specialties.

J. H. Day Co., Cincinnati, Ohio, make a number of special machines for the manufacture of wall plaster, cement, etc., which are illustrated in pamphlet form issued by them. There is a lighting disintegrator, sand dyers, plaster mixers crushers, screens and a number of other things which they will be glad to tell you about, if you will look up their advertisement and write them. You will find it in this issue.

A correspondent writes us from Salisbury, N. C., that there is a range of granite quarries in that locality from 15 to 20 miles long, and from one and a half to two miles wide. J. H. Wyatt has discovered pink granite on his farm near there which has proven to be a very fine article, and Mr. C. Miller, Washington City, and C. F. Massy, of Baltimore, Md., bought the property and are opening up the quarry, and are now getting out some fine vaults and monuments for Northern cities.

Harry A. Eastman, representing The Midland Portland Cement Co., of Indianapolis, Ind., was among our callers this month. This company, as has been mentioned heretofore, was organized to build a cement plant at Bedford, Ind., and Mr. Eastman and others of the company have been in Louisville to dispose of some of the bonds of the company to financial men of this city. Mr. Eastman says they have already placed quite a lot of the bonds here, sufficient to insure the early completion of the works at Bedford.

The Ohio Retarder Co. was reorganized at Port Clinton, Ohio, during August. This company's old plant at Oak Harbor was recently destroyed by fire, and it is said the reorganized plant will build at Port Clinton on a much larger scale. The officers of the company under the reorganization are: C. I. York, president; C. F. Searles, vice president; C. E. Payne, secretary; Wm. Gordon, treasurer, and F. S. Culver, general manager. Mr. Culver is also interested in the United States Gypsum Co., and it is said that the process of manufacture of this retarder is known only to himself and the man who does the mixing.

A. P. Dyke, of Hope, Ark., has issued a booklet of 40 pages about the oil and rice lands of Texas and Louisiana. The book is appropriately illustrated with oil-well scenes, farm scenes and other interesting view of the South. Mr. Dyke is a financial agent and broker in Texas rice and oil lands, Arkansas oil and salt wells and other real estate. In fact, he handles everything from a vegetable farm or factory site to a spindle-top gusher. Those desiring a copy of this book can obtain it free by addressing A. P. Dyke, Box 73, Hope, Ark.

The League of American Municipalities met at Grand Rapids, Mich., August 29. One of the features of the meeting was a paper by B. F. Fendall, city engineer of Baltimore, Md., on street paving, in which he suggested that the League take action to secure a combination between cities of the United States by which, in the matter of prices on asphalt paving, a fixed minimum price could be set. Among other speakers of the first day's session was Mayor Wm. D. Doyle, of Akron, Ohio, who discussed the Ohio municipal situation; Mayor Ignatius A. Sullivan, of Hartford, Conn., advocated ownership of street railways, etc., and C. E. Campbell, of Des Moines, Ia., who reviewed the German method of governing cities.

Information Bureau

A Few of the Direct Inquiries Made to the
Office of Rock Products During Last Month.

If you do not see what you want in ROCK PRODUCTS, write us about it.

247.—I want the addresses of parties manufacturing lime barrels in Minnesota, Washington or Oregon.

248.—We want air compressors.

249.—We want boilers.

250.—We need cranes.

251.—We need derricks.

252.—We are in the market for dump cars.

253.—We are in need of electrical machinery.

254.—We want engines.

255.—We are in the market for hoisting engines.

256.—We want quarry machinery.

257.—I am in the market for rock drills.

258.—Where can we get sand machinery?

259.—We need stone machinery.

260.—I am in the market for scrapers.

261.—We are in need of screw feed gangs.

262.—I am in the market for wire rip saws.

263.—We are in the market for a good nozzle machine.

264.—We need barrels.

265.—We want electric lamps.

266.—I am in the market for lime.

267.—We are in need of sand.

268.—I want stone.

269.—We want grindstones.

270.—We are in the market for paving stone.

271.—We want sandstone.

272.—I need granite.

273.—We want brownstone.

274.—We want information relative to foundation work.

275.—We are in need of builders' material.

276.—We want asphalt and gravel roofing.

277.—We are in the market for asphalt.

278.—We need brick.

279.—Where can we get cement?

280.—We need asphalt tile machinery.

281.—We need brick machinery.

282.—We want information relative to figuring cost on granite.

283.—We are in the market for centrifugal pumping machinery for sand.

284.—I need sand elevating and conveying machinery.

285.—We need sand machinery.

286.—Where can we get revolving screens?

287.—I am in search of a non-freezable, fire-extinguishing fluid.

288.—I need a rock crusher.

289.—We are in the market for stone and granite roofing.

290.—I need sand.

291.—Where can I get gray stone?

292.—I am looking for artificial or concrete stone machinery.

293.—I want cranes for butchering.

294.—We are in the market for an electric dynamo, engine and boiler.

295.—I want information pertaining to granite turning and polishing.

296.—I want a pulverizer; will take second-hand one if in good condition.

297.—I need fertilizer mill machinery.

298.—I am in the market for masonry.

299.—Where can I get phosphate machinery?

STATE GEOLOGISTS.

We give below a list of State Geologists and their locations, as revised up to 1902 by the United States Geological Survey, for the information of our readers, who desire to consult the various State authorities on subjects of mutual interests. If there is any error in the names or addresses, we would be pleased to have those wrongly listed inform us of the fact, that we may keep the list corrected up to date at all times, and we will also appreciate it if geologists will notify us of changes, so that we can keep our list correct:

ALABAMA—Eugene A. Smith, University P. O.
ARIZONA—W. P. Blake, Territorial Geologist, Tucson.

ARKANSAS—John C. Branner, Stanford University, California.

CALIFORNIA—Lewis E. Aubury, State Mineralogist, San Francisco.

GEORGIA—W. S. Yeates, Atlanta.

ILLINOIS—C. H. Grantz, Springfield.

INDIANA—W. S. Blatchely, Indianapolis.

IOWA—S. Calvin, Des Moines.

KANSAS—F. H. Snow, University of Kansas, Lawrence.

KENTUCKY—State Geological Department, Lexington.

MARYLAND—Wm. B. Clark, John Hopkins University, Baltimore.

MICHIGAN—Dr. Alfred G. Lane, 503 Hollister Block, Lansing.

MISSOURI—Dr. E. R. Buckley, State Geologist, Jefferson City.

NEW JERSEY—Dr. H. B. Kummel, Trenton.

NEW YORK—Fred J. H. Merrill, State Museum, Albany; John M. Clarke, State Paleontologist, State Museum, Albany.

NORTH CAROLINA—J. A. Holmes, Chapel Hill.

NORTH DAKOTA—E. J. Babcock, State University, Grand Forks.

OHIO—Edward Orton, Jr., Columbus.

OKLAHOMA—Charles N. Gould, University of Oklahoma, Norman.

PENNSYLVANIA—Second Geological Survey of Pennsylvania, care State Librarian, Harrisburg.

SOUTH CAROLINA—Earle Sloan, Charleston.

SOUTH DAKOTA—James E. Todd, Vermillion.

TENNESSEE—L. C. Glenn (not called State Geologist), Nashville.

TEXAS—W. B. Phillips, State University, Geological Survey, Department of Agriculture, Austin.

VERMONT—George H. Perkins, State Geologist, University of Vermont, Burlington.

WASHINGTON—Henry Landis, Seattle.

WEST VIRGINIA—Prof. I. C. White, Morgantown.

WISCONSIN—E. A. Birge, State Geologist, Madison.

WYOMING—Prof. H. C. Beeler, State Geologist, Cheyenne.

The American Asbestos Co. has been organized at Bedford City, Va., with a capital stock of \$1,000,000.00, to mine and work asbestos. The officers are: President, William C. Doak; vice president, Alvin N. Higgins; secretary, Gustave A. Conzman, of Terre Haute, Ind.

The firm of Booth Bros. & Hurricane Isle Granite Co., Rockland, Me., have received a contract for paving 40 blocks on Chestnut and Walnut Streets, at Long Cove, for the Philadelphia Traction Co. This is the second contract of the kind they have been awarded recently.

Reports from McMinnville, Tenn., state that a contract has been let to The Nashville Bridge and Construction Co., of Nashville, Tenn., for the building of four bridges for the sum of \$9,000.00. Two of these bridges are to be steel structures across Collins River, and the other a wooden bridge across Rocky River.

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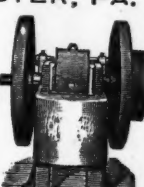
LET US SELL that plant for you. See head of department for rates.

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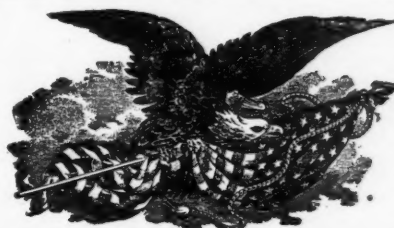
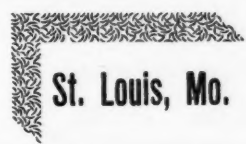
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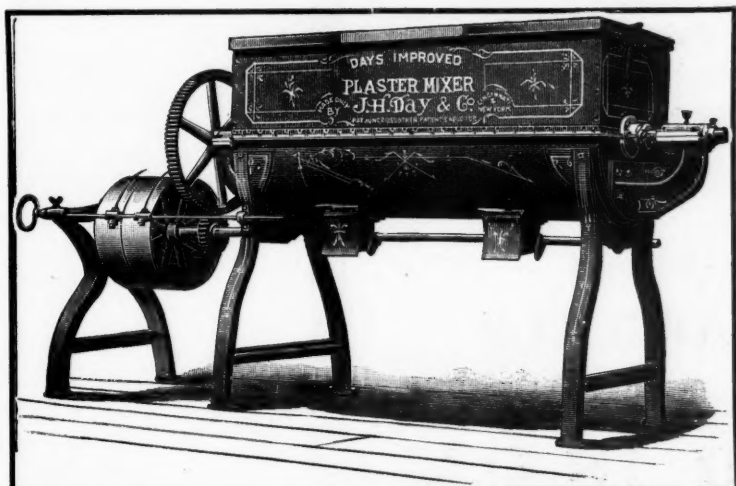
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
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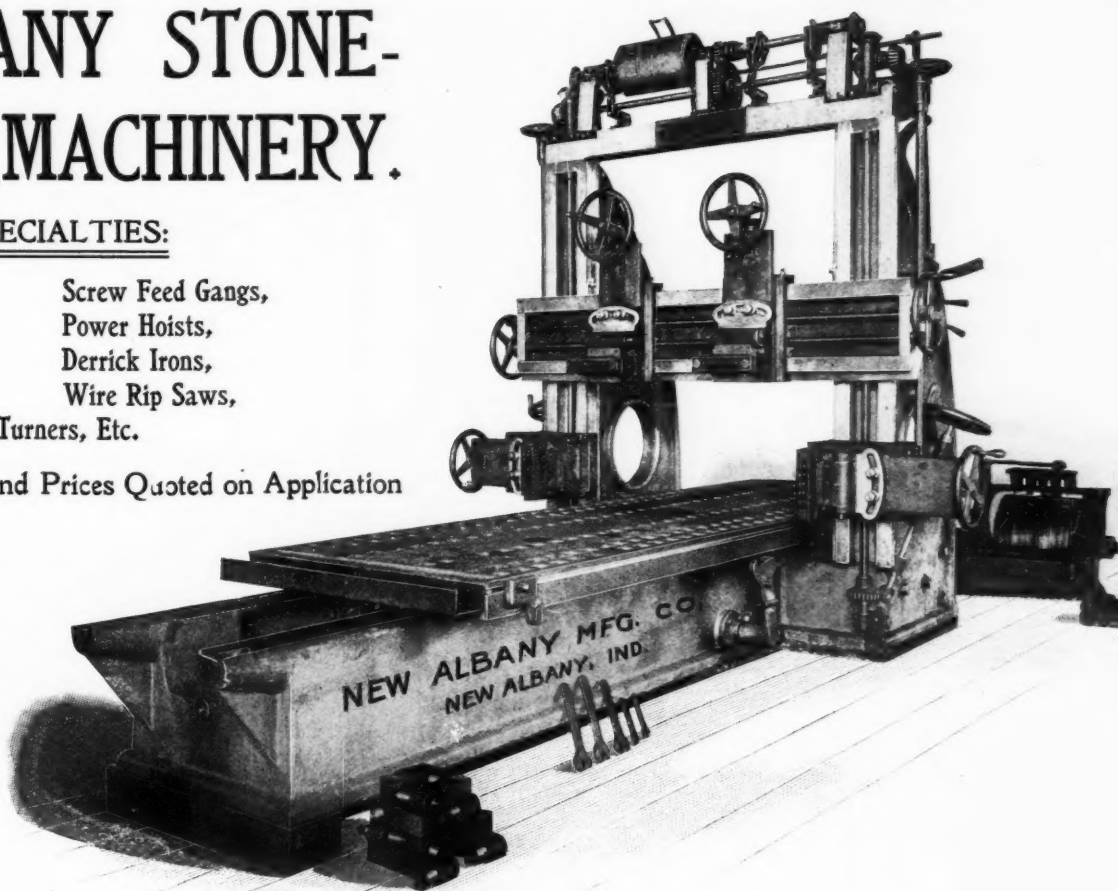
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